Digifly

Aviation Instruments

User manual

Cartesio plus - Cartesio Pro BT

Leonardo Pro - Leonardo Pro BT

Version 1.2 UK (1/9/2008)

CONGRATULATIONS

Thank you for choosing Digifly!
You have purchased a high technology instrument designed expressly for free flight. The multiple functions and flight data it provides, effectively make it an on board computer. Learning to use this instrument will make your flying easier in terms of performance and safety. It will enable you to improve your flying technique and make piloting decisions more quickly thanks to the comprehensive flight information that is provided. Another benefit is the ability to download and analyze your flight data afterwards. Our designers can foresee future software developments, so the software at the heart of this instrument can be updated at any time via the Internet using the optional Digifly PC cable.

DIGIFLY INTERNATIONAL GUARANTEE

Dear Customer,

Thank you for purchasing this Digifly product which has been designed and manufactured to the highest quality standards. Digifly warrants this product to be free from defects in materials and workmanship for 3 years from the date of purchase.

The Digifly guarantee applies provided the product is handled properly for its intended use, in accordance with its operating instructions and upon presentation of the original invoice or cash receipt, indicating the date of purchase, the dealer's name, the model and the serial number of the instrument. The customer is however, responsible for any transportation costs. The unit must be securely packaged for return.

The Digifly guarantee may not apply if:

- The documents have been altered in any way or made illegible.

- Repairs or product modifications and alterations have been executed by unauthorized person or service.

- Damage is caused by accidents including but not limited to lightning, water or fire, misuse or neglect.

Digifly assumes no responsibility for special, incidental, punitive or consequential damages, or loss of use. If your Digifly product is not working correctly or is defective, please contact your Digifly dealer. In order to avoid unnecessary inconvenience, we advise you to read the operating instructions carefully before contacting your dealer.

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2 GETTING STARTED

2.1 GUIDE TO SOCKETS

2.2 BATTERIES

2.2.1 BATTERY TYPES ("PRO" MODELS)

- The Digifly instrument "PRO" models (**Cartesio Pro BT** , **Leonardo Pro** and **Leonardo Pro BT**) are supplied with a high power, fully independent, double battery system :
- **the main power** is supplied by an internal rechargeable lithium battery (supplied as standard) with a full recharge time of only 3 hours. This battery has no memory effect, so it can be be partially recharged, it also has a very low self discharge rate (more than one year) and works very well at low temperatures. Battery life ranges from 30 hours to 200 hours depending on whether GPS or Bluetooth has been activated.
- **the backup battery** is a high power non-rechargable 1.5 volt AA size battery. This battery is situated in the removable battery "slot" and can also be replaced with other 1.5 volt AA size batteries. To change this battery you will need a flat-blade screwdriver to unscrew the battery cover on the rear of the vario. Rechargeable batteries can be used, though are not recommended for the backup battery system because of their high self discharge rate (after 2 months they are completely discharged and useless). If using a rechargable backup battery, note that this battery is not recharged by the instrument but has to be removed and recharged externally by the user. The backup battery life ranges from 20 hours to 200 hours depending on whether GPS or Bluetooth has been activated

2.2.2 BATTERY TYPES ("PLUS" MODEL)

- The **Cartesio Plus** model has only one non-rechargable 1.5 volt AA size battery. This battery is situated in the removable battery "slot" and can also be replaced with other 1.5 volt AA size batteries. To change this battery you will need a flat-blade screwdriver to unscrew the battery cover on the rear of the vario. Rechargeable batteries can be used,

though are not recommended because of their high self discharge rate (after 2 months they are completely discharged and useless). If using a rechargable backup battery, note that this battery is not recharged by the instrument but has to be removed and recharged externally by the user. The battery life is about 200 hours.

2.2.3 BATTERY LIFE ("PRO" MODELS)

- the Digifly instruments "**PRO**" models (**Cartesio Pro BT** , **Leonardo Pro** and **Leonardo Pro BT**) can achieve 30 hours use (main internal lithium battery) + 20 hours use (removable backup battery) under optimal conditions.
- When the battery icon starts to blink there are less than 5 hours use remaining .

2.2.4 RECHARGING THE INTERNAL LITHIUM BATTERY ("PRO" MODELS)

- With the instrument turned off, insert the Digifly Wall Adapter Recharger plug in to the left socket of your Digifly flight instrument.
- The vario display shows the blinking message “**CHARGE**” while charging and "**LITIO FULL**" when fully charged.
- The time required for a full recharge is about 3 hours.
- There is no problem if you leave the vario charging for more than 3 hours , as the vario automatically switches to a “maintain mode” to prevent any damage from occurring due to overcharging the battery.
- With Lithium batteries, there is no “memory effect”, so you may also partially charge the main Lithium battery.

2.3 NORMAL OR LONG KEY PRESS

- The length of time a key is pressed on your Digifly instrument influences the functions available.
- For a normal key press, you must press the button for less than a second.
- For a long key press, you must keep the button pressed down for at least 2 seconds.
- When not specified, the key press is to be considered as a normal key press (less than a second).

2.4 TURNING ON & OFF

- To turn on your Digifly instrument, press the ON-OFF key at least for 4 seconds.
- To turn off your Digifly instrument, press the ON-OFF key at least for 4 seconds.
- After switching off your Digifly instrument, you must wait at least 5 seconds before you can turn it on again. This prevents unwanted operation e.g. during transit in your glider bag.
- After turning your Digifly instrument on, the first screen briefly shows the vario model, pilot name (if set), vario serial number, software version, date and time and battery voltage.

2.5 DISPLAY CONTRAST ADJUSTMENT

- The contrast of the Digifly instrument LCD display can be adjusted to suit ambient light conditions.
- To change the contrast of the display, go to (**MAIN SETUP \ n. 1 CTRS**), press the MENU key (function "**EDIT**") to go to the edit mode and then press the arrow keys ▲, ▼ to increase or decrease the display contrast.

2.6 MENU NAVIGATION

- To navigate the menus on your Digifly instrument, go to the **MENU** page by pressing the MENU key (function "**men**").
- To return to the instrument's main display, press the ON-OFF key (function "**ESC**").
- From the "**MENU**" page, to select the sub-menus, move up and down using the arrow keys ▲, ▼ and to confirm, press the MENU key (function "**ENT**").
- To change the selected parameter's values, use the arrow keys ▲, ▼ and confirm with the MENU key (function "**SAV**") or you can also leave without saving your edit with the ON-OFF key (function "**ESC**").

2.7 SETTING UP YOUR INSTRUMENT

- To setup your Digifly instrument and adjust the parameters mentioned in the following sections, go to the **MENU** page by pressing the MENU key (function "**men**").
- There are two setup menus on the Digifly instrument. The "**MAIN SETUP**" menu and the "**ADVANCED SETUP**" menu.
- Using the arrow keys ▲, ▼ scroll to select the "**MAIN SETUP**" or the "**ADVANCED SETUP**" menu and to select, confirm, press the MENU key (function "**ENT**").
- You will now see a list of parameters that can be adjusted in the "**MAIN SETUP**" there are 32 parameters that can be adjusted. In the "**ADVANCED SETUP**" there are 19 parameters that can be adjusted.
- To change parameters, select the parameter you want to change, move up and down with the arrow keys ▲, ▼. Press the MENU key (function "**EDIT**") to go to the edit mode.

- To change the selected parameter's values, use the arrow keys ▲, ▼ and confirm with the MENU key (function "SAV") or you can also leave without saving your edit with the ON-OFF key (function "ESC").
- To return to the instrument's main display, press the ON-OFF key (function "ESC").

2.8 MULTI LANGUAGE HELP

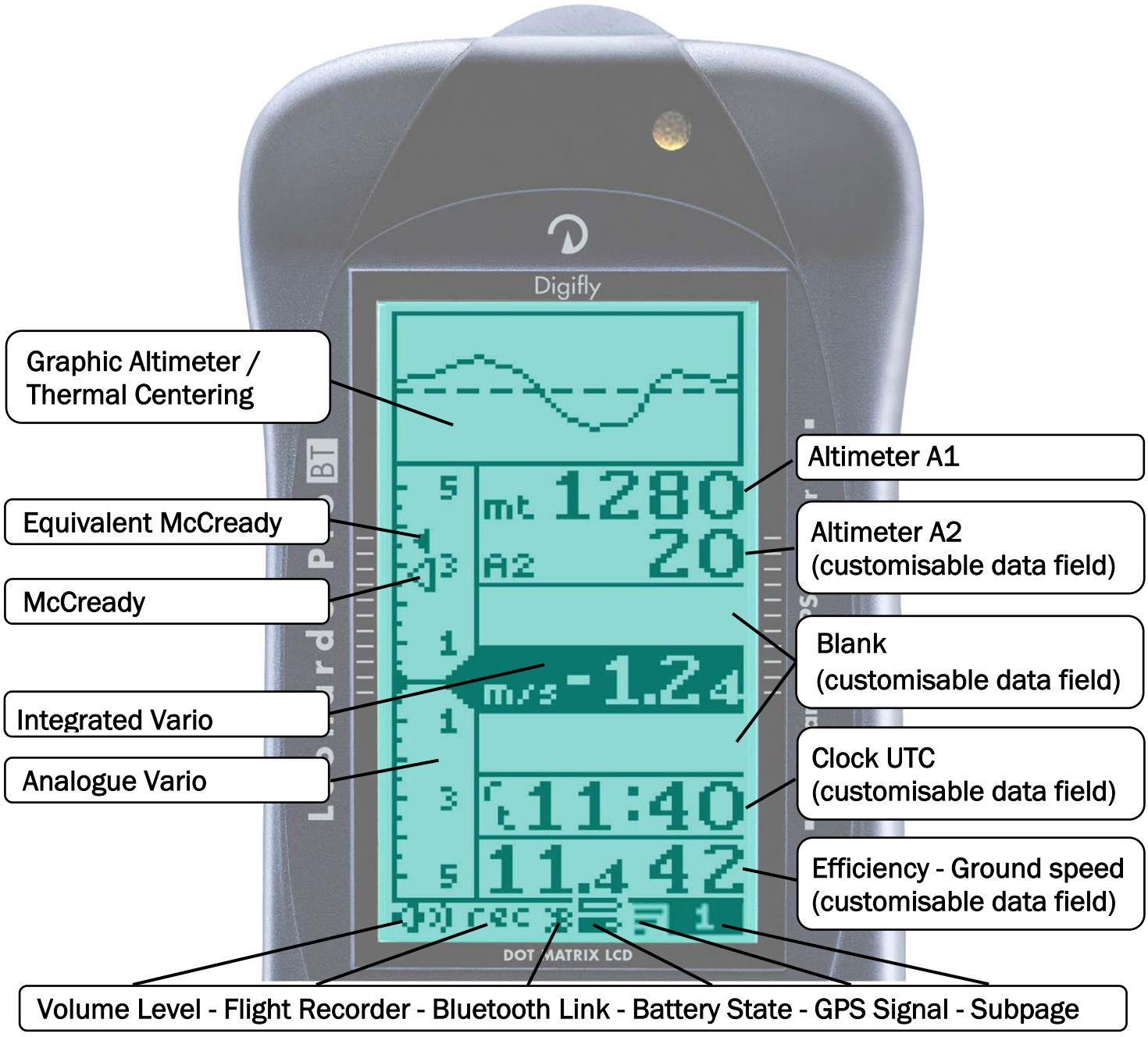
- To help you setup your Digifly instrument, the instrument supports several help languages. To change the help language go to (MAIN SETUP \ n. 32 LANG) & select the language of choice
- When updating the software on the Digifly instrument, make sure you upload the latest help file for the language you have selected, using the "upload HELP" function of the Digifly VItools software on your PC.

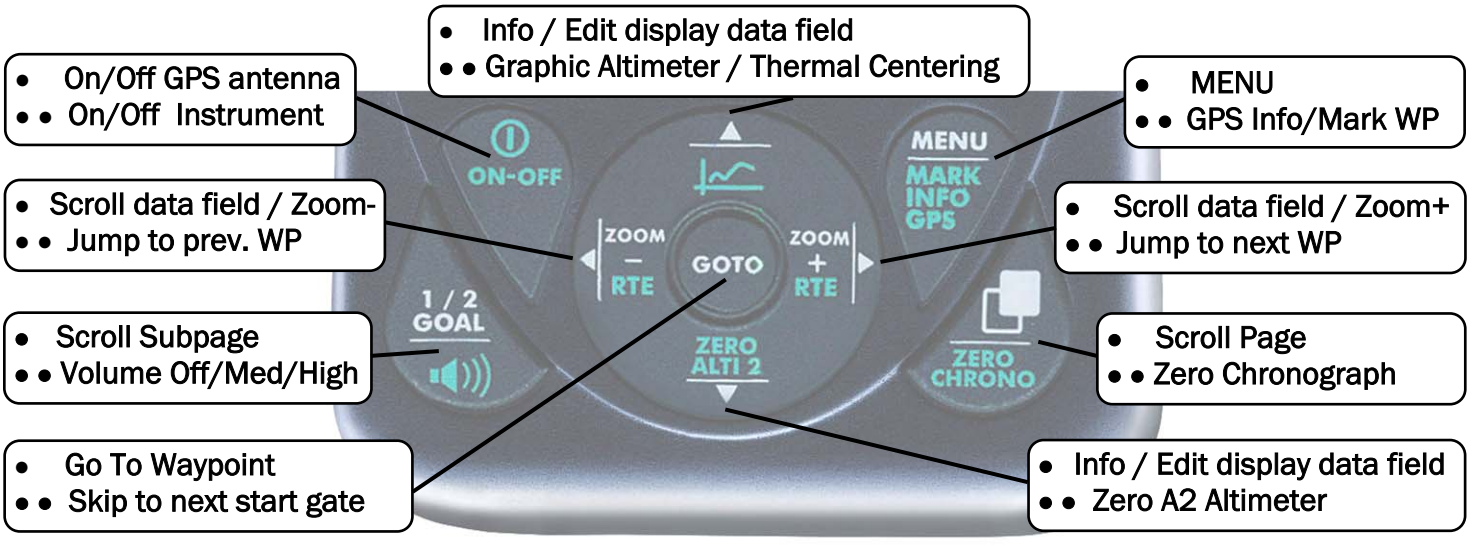
2.9 RESTORE FACTORY SETTINGS

- To restore the factory settings (default values for all parameters), press and hold down the ⧉ key as you turn vario on. Keep the ⧉ key pressed until a message "FACTORY SET?" appears, then confirm with "YES" or "NO". If you select "YES", a confirming message "SETUP RESET" is shown.

3 QUICK REFERENCE GUIDES

3.1 THERMAL DISPLAY SCREEN



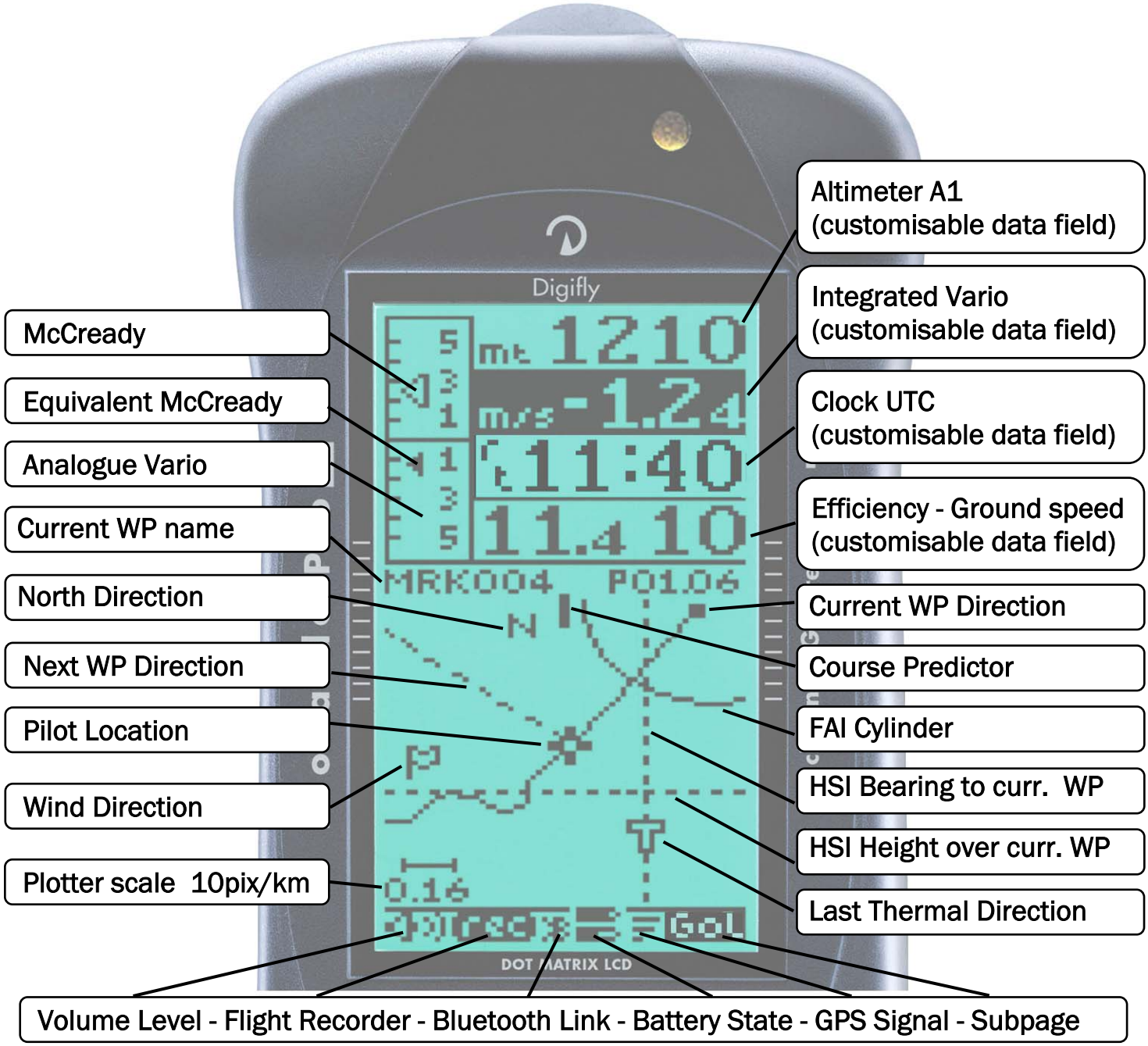


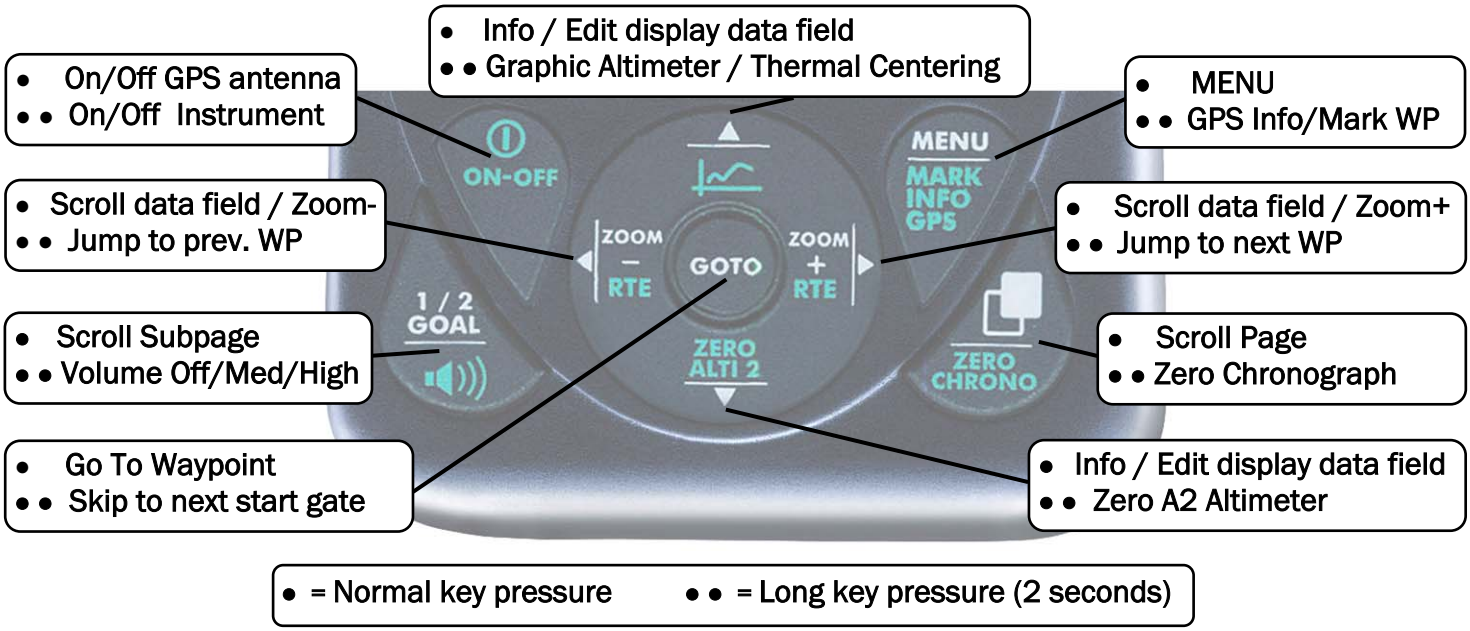
• = Normal key pressure •• = Long key pressure (2 seconds)

3.2 GLIDE COMPASS DISPLAY SCREEN

• = Normal key pressure •• = Long key pressure (2 seconds)

3.3 GLIDE PLOTTER DISPLAY SCREEN



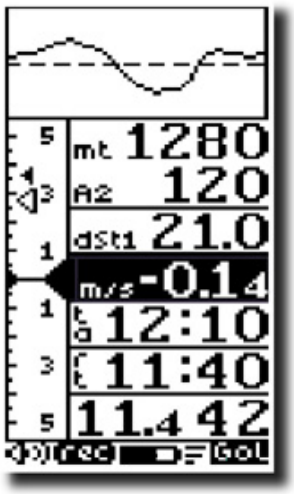


4 DISPLAY

4.1 MAIN DISPLAY SCREENS

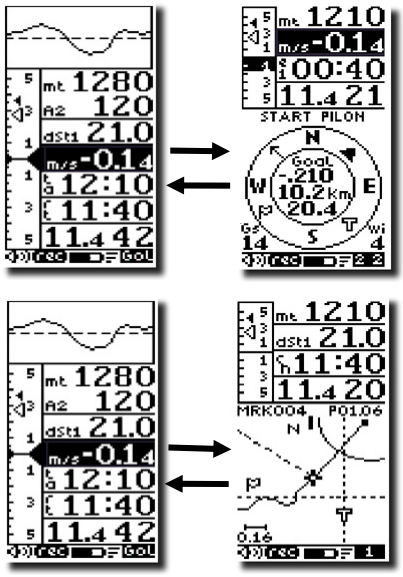
- The are 3 main display screens on the Digifly instrument:
  - The **Thermal Display** , the **Glide Compass Display** and the **Glide Plotter Display**.

To manually switch between these 3 main display screens, press the key.



THERMAL DISPLAY GLIDE COMPASS DISPLAY GLIDE PLOTTER DISPLAY

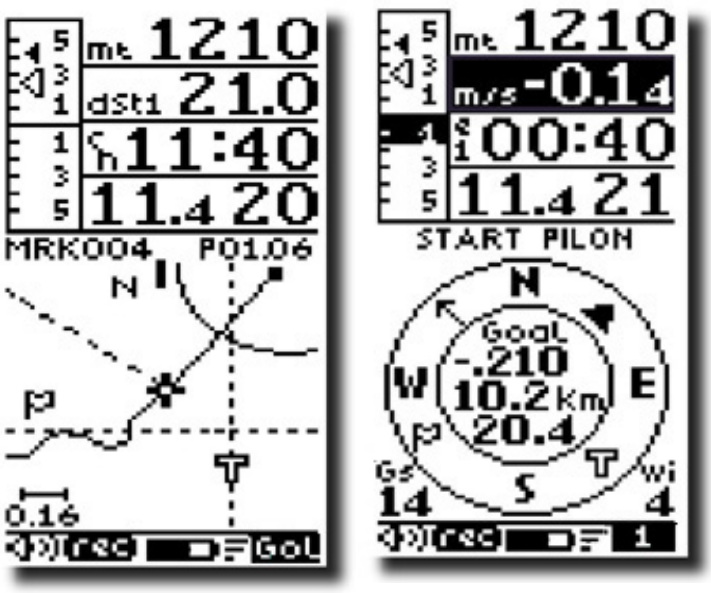
4.2 AUTOMATIC SCREEN SWITCHING - INTELLIFLIGHT



- The Intelliflight function handles the automatic screen switching between the **Thermal Display** screen and **Glide Compass Display** or **Glide Plotter Display** screens.
- To enable this function go to (**ADVANCED SETUP \ n. 1 IFLY**) and set it to "**ON**".
- The Digifly instrument will switch automatically to the **Thermal Display** screen when the conditions of a thermal are met.
- To set the thermal detection parameters, go to (**ADVANCED SETUP \ n. 2 THEV**) and (**ADVANCED SETUP \ n. 3 THET**) to adjust the time over which a change in height is required for detection of a thermal.
- The instrument will then switch back to the **Glide Compass** or **Glide Plotter** display screens when there is no lift for more than 10 seconds.

4.3 GLIDE PLOTTER AND GLIDE COMPASS DISPLAY SCREENS

- The **Glide Plotter** display shows essential vario information along with a live graphical trace of your flight, Waypoints & Route information and wind direction.
- For some of these function to be active, Waypoints must have been entered in to the Digifly instrument and a Route activated and a GPS "**FIX**" achieved.
- The **Glide Compass Display** screen shows essential vario information along with a compass, showing Waypoints & Route information, thermal location, efficiency information, ground speed , wind speed and wind direction.



4.3.1 PLOT SCALE

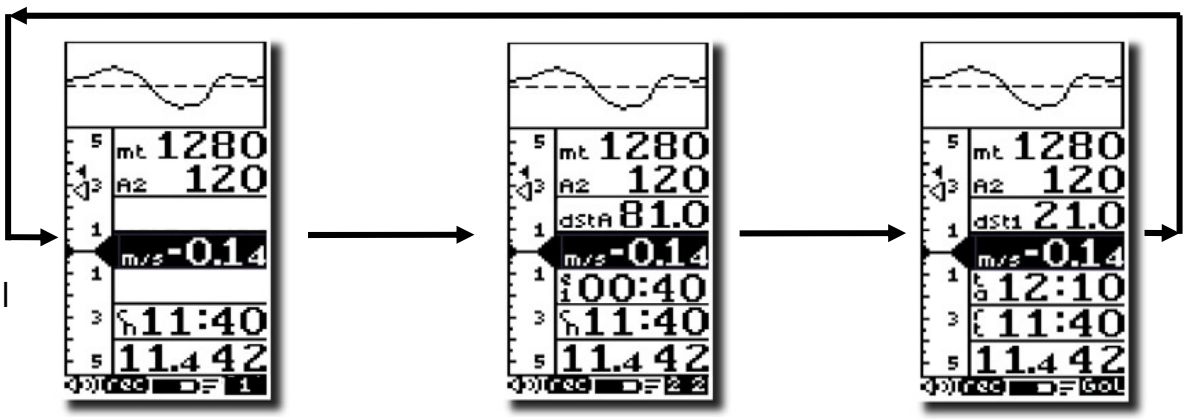
- To zoom in or out of the live plot of your flight, press the arrow keys ◄| , |►
- The plot scale is shown on the left of the screen according to the following values:

ZOOM VALUE	Km/screen	m/pixel
0.01	0.06	1
0.02	0.125	2
0.04	0.25	4
0.08	0.5	8
0.16	1	16
0.32	2	32
0.64	4	65
1.28	8	130
2.56	16	250
5.12	32	500
10.2	65	1000
20.4	130	2000
40.9	250	4100

4.4 SUB SCREENS

- On each of the main display screens (the **Thermal Display** screen, **Glide Compass Display** screen and **Glide Plotter Display** screens) there are 3 fully customizable sub pages, a total of 9 sub-pages already setup and configured with information related to:

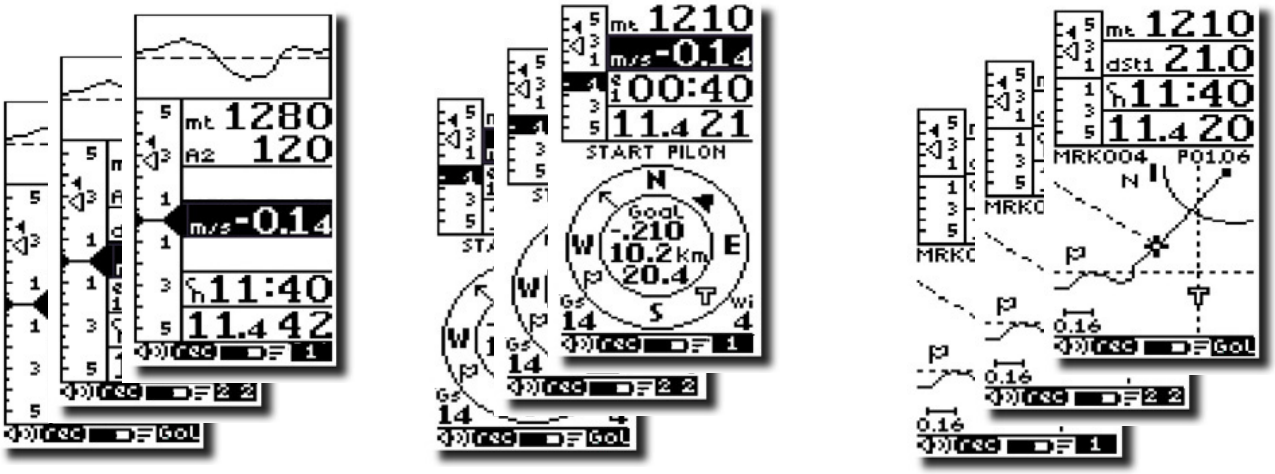
- To scroll



The current Waypoint The next Waypoint Goal

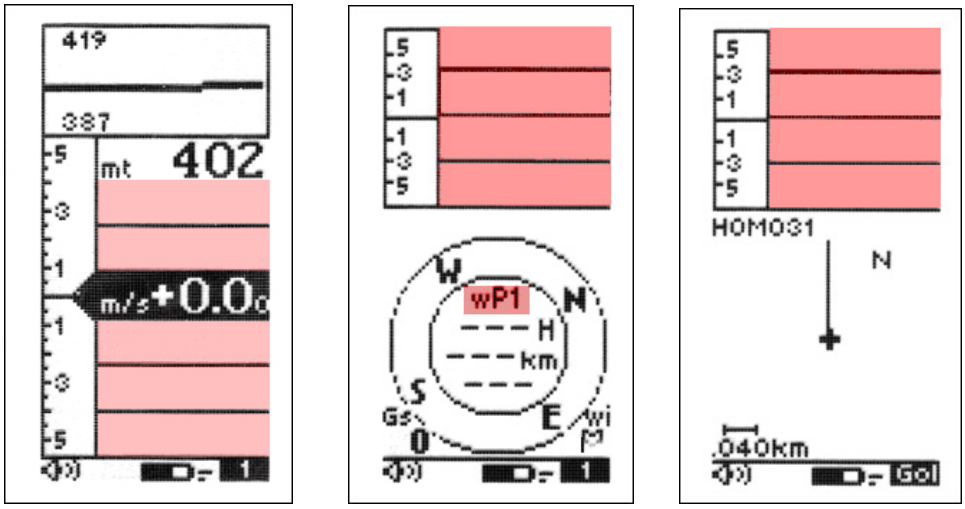
between the each sub-page, press the key.

- Sub-page "1" is preset with all information related to the WP1 (the current Waypoint) and is easily recognized by the icon "**1**" on the display status bar
- Sub-page "2" is preset with all information related to the WP2 (the next Waypoint) and is easily recognized by the icon "**2 2**" on the display status bar.
- Sub-page "3" is preset with all information related to the arrival Waypoint (GOAL) and is easily recognized by the icon "**GOL**" on the display status bar.



4.5 CUSTOMISABLE DATA FIELDS

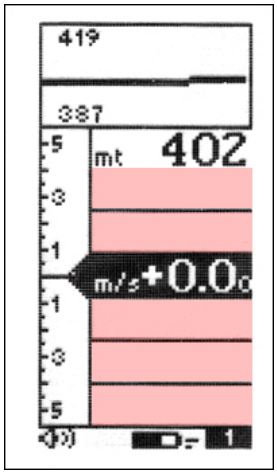
- It is possible to customise the pre-set screens.
- On the **Thermal Display Screen** there are 5 data fields (highlighted here in red) that can be customized to change the type of data to be displayed.
- On the **Glide Plot** and **Glide Compass Display Screen**s all 4 main data fields (highlighted here in red) that can be customized to change the type ofdata to be displayed.
- On the Glide Compass Display screen the inner triple instrument reference can also be customized to display WP1, WP2, GOAL or Thermal.

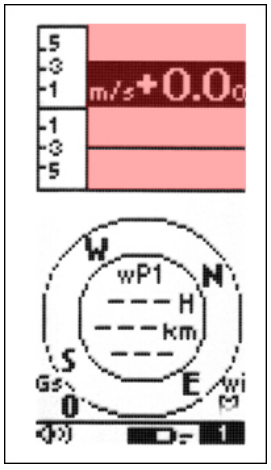


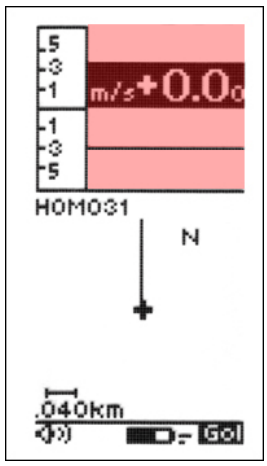
- To change the data shown in this field, press the ▲, ▼ keys to highlight the field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and for approximately 3 seconds a description of the data currently being displayed is shown.
- To change the data you wish to display, press the ◀, ▶ keys. Each time a new parameter is selected, the field shows the a description of the data currently selected.

4.6 DISPLAYING ADDITIONAL INFORMATION RELATING TO WAYPOINT AND ROUTES

- For these functions to be active, Waypoints must have been entered in to the Digifly instrument, a Route activated, the GPS switched "**ON**", a GPS "**FIX**" made,".
- The additional data relating to Waypoints and routes can be shown in any of the customizable data fields (shown here in red) on each of the main display screens (**Thermal Display** screen, **Glide Compass Display** screen and **Glide Plotter Display** screen)







- To show additional information in any of these customizable fields, press the ▲, ▼ keys to highlight & select the data field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and a description of the data currently being shown is that field is shown for approx 3 seconds.
- To change the data you wish to display, press the ▲, ▼ key. Each time the data field is changed, the field briefly shows a description of the data type currently selected.

4.7 TIME INFORMATIONS

- The Digifly instrument can display time information related to Waypoints and Routes:

- **ero**: Estimated relative time related to start gate time in seconds, negative = advance (wrong) / positive = delay (correct).
- **es**: Remaining time to start pylon gate open.
- **e1**: Estimated remaining time to current Waypoint.
- **e2**: Estimated remaining time to next Waypoint.
- **eA**: Estimated remaining time to goal.
- **ts**: Start pylon absolute time .
- **t1**: Estimated time to current Waypoint.
- **t2**: Estimated time to next Waypoint.
- **tA**: Estimated time to Goal.
- **rt**: UTC Time.
- **ch**: Chronograph.

4.8 DISTANCE INFORMATONS

- The Digifly instrument can display distance information related to Waypoints and Routes:

- **dstT**: Distance to last thermal.
- **dst1**: Distance to current Waypoint.
- **dst2**: Distance to next Waypoint.
- **dstA**: Distance to Goal.

4.9 EFFICIENCY INFORMATIONS

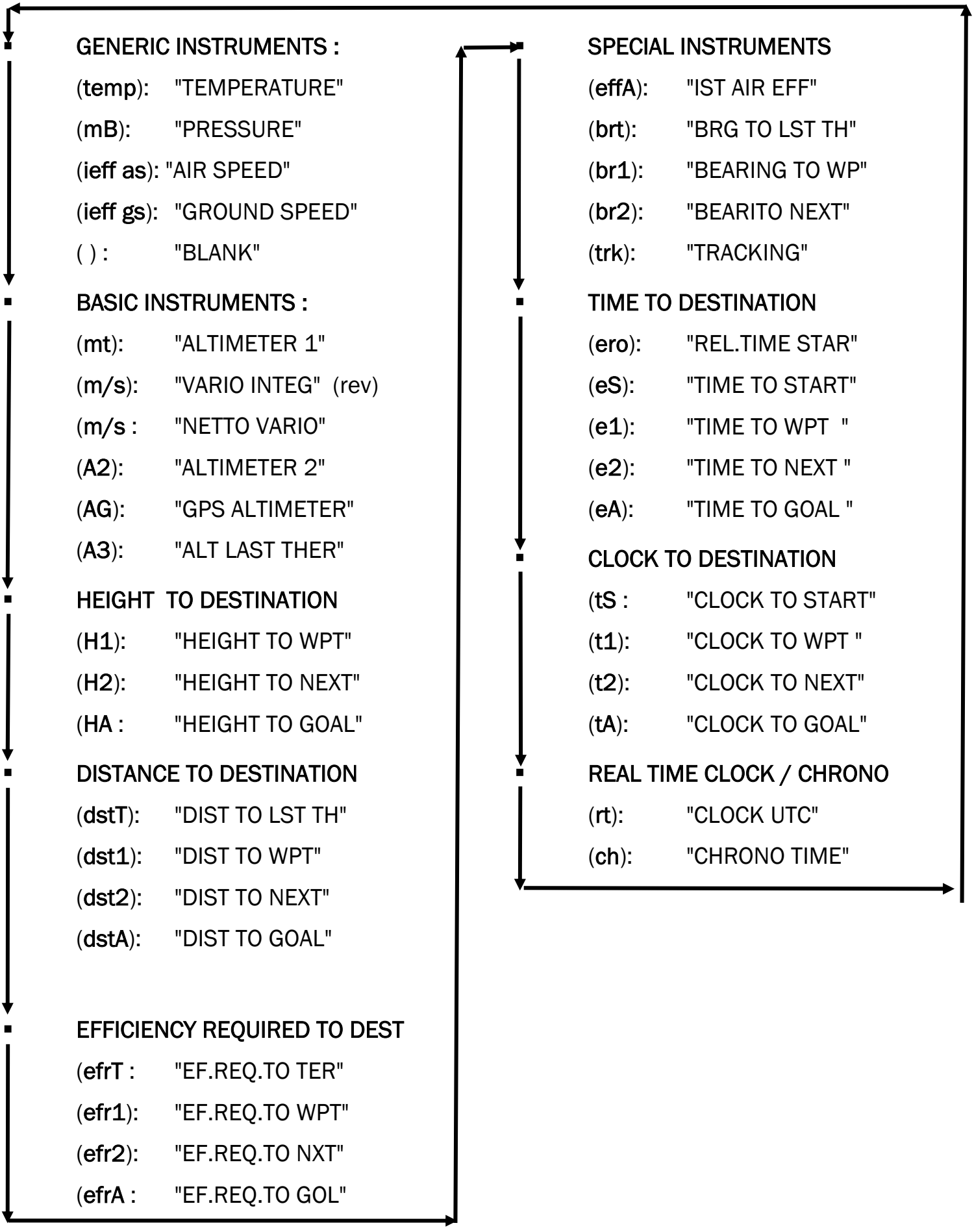
- **efrT**: Efficiency required to last thermal.
- **efr1**: Required efficiency to current Waypoint.
- **efr2**: Required efficiency to next Waypoint.
- **efrA**: Required efficiency Goal.
- **effA**: Instant efficiency related to the Air.

4.10 TRACKING INFORMATIONS

- The Digifly instrument can display tracking information related to Waypoints and Routes:

- **BRT**: Bearing to last thermal.
- **BR1**: Bearing to current Waypoint.
- **BR2**: Bearing to next Waypoint.
- **TRK**: Tracking.

4.11 DATA FIELDS SHOWN IN SEQUENCE

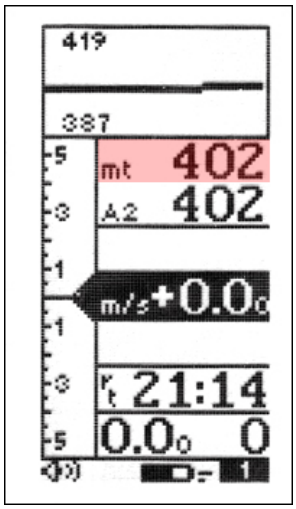


5 BASIC FUNCTIONS

5.1 ALTIMETER

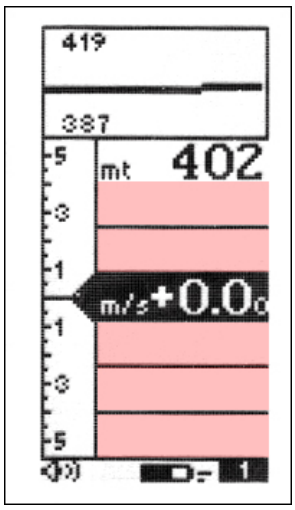
- The Digifly instrument has 7 different altimeters: **A1**, **A2**, **AG, A3, H1**, **H2** and **HA.**
  - **A1**: Barometric altimeter.
  - **A2**: Altimeter A2.
  - **AG**: GPS altimeter.
  - **A3**: Last thermal height gain.
  - **H1**: Estimated height over current WP.
  - **H2**: Estimated height over next WP.
  - **HA:** Estimate height over goal.

5.1.1 BAROMETRIC ALTIMETER (A1)



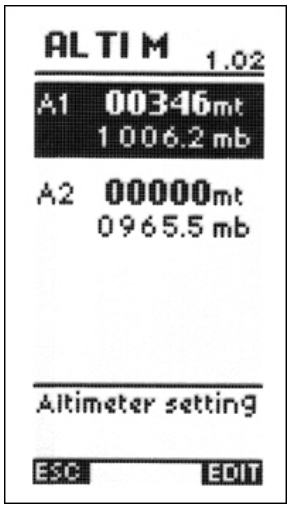
- On the **Thermal Display** page the **A1** altimeter (barometric altimeter) is the first altimeter shown (highlighted here in red).
- In order to synchronize the **A1** altimeter (barometric altimeter) with the **GPS** altitude, the **GPS** unit must be turned "**ON**" and a **GPS** "**FIX**" made.
- To turn "**ON**" the GPS, press the **ON-OFF** key. A confirming message "**ON GPS?** " is shown and a confirmation of "**YES**" or "**NO**" is required.
- To synchronize the **A1** altimeter (barometric altimeter), press the **MENU** key (long press), this takes you to the "**MARK**" page where the current GPS information is also shown. You can then check if the **GPS** altitude is available and stable for at least one minute, then press the **GOTO** key (long press) to confirm; the display will then show "**ALTIM SYNC**".
- WARNING: if the recorder is activated is not possible to synchronize the barometric altimeter.
- If no **GPS** information is shown here, a **GPS** "**FIX**" has not been made as there may be no or poor GPS reception.
- The altimeters can be shown in metric (mt) or imperial (ft) units. To change the units of display, go to (**MAIN SETUP \ n. 28 V-AL**). and change from "**MT**" to "**FT**".

5.1.2 ADDITIONAL ALTIMETERS



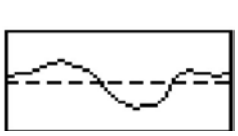
- The additional altimeters **A2**, **AG, A3, H1**, **H2** and **HA** can be shown in any of the 5 customizable display fields on the **Thermal Display** screen (highlighted here in red).
- To show additional altimeter information in any of these customizable fields, press the ▲ , ▼ keys to highlight & select the data field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and a description of the data currently being shown is that field is shown for approx 3 seconds.
- To change the data you wish to display, press the ◀ , ▶ keys. Each time the data field is changed, the field briefly shows a description of the data type currently selected.
- The **A2** altimeter is for generic use. To zero the **A2** altimeter press the ▼ key (long press).
- The **A3** altimeter is automatically zeroed when a thermal is found. There are 2 parameters that can be adjusted to allow the Digifly instrument to identify a thermal; the change in height and the time over which the change in height occurs.
- To set the thermal detection parameters, go to (**ADVANCED SETUP \ n. 2 THEV)** and (**ADVANCED SETUP \ n. 3 THET**) to adjust the time over which a change in height is required for detection of a thermal.
- The **AG** altimeter shows the GPS altitude. If a GPS "**FIX**" has not been made of the GPS has been switched off a value of "**0**" is shown in the display.
- The **H1**, **H2** and **HA** altimeters are special altimeters that show the expected height over the current Waypoint (**H1**), over the next Waypoint (**H2**) and over goal (**HA**) at your current efficiency.

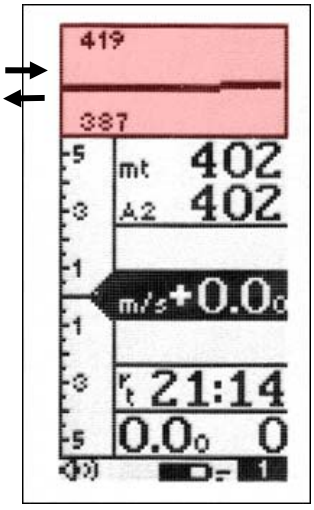
5.1.3 ADJUSTING ALTIMETERS A1 AND A2



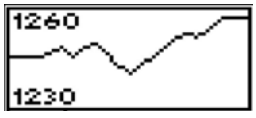
- Go to the altimeter menu "**ALTIM**" and select which altimeter (**A1** or **A2**) you want to adjust. Move up and down using the arrow keys ▲ , ▼ and press the **MENU** key (function "**EDIT**"). To adjust the altimeter value use the arrow keys ▲ , ▼ and confirm with the **MENU** key (function "SAVE") or leave without saving with the **ON-OFF** key (function "ESC").
- To set the **A1** and **A2** altimeters to standard QNH (1013mb), go to the altimeter menu "**ALTIM**" and select which altimeter (**A1** or **A2**) you want to adjust. Press the **GOTO** key (long press). A confirmation of "**YES**" or "**NO**" is required.

5.1.4 GRAPHIC ALTIMETER AND THERMAL CENTERING DISPLAY

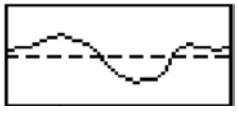




- This is a live plot of your altitude against time (highlighted here in red), it scrolls whilst you are flying. It will help you to see how effectively you are climbing or turning in a thermal. It is especially useful in weak conditions.
- The scales on the graphic altimeter can be changed go to (**MAIN SETUP \ n. 13 BARY** and **\n. 14 BARY**).
- To switch between the graphic altimeter and the thermal centering display, press the ▲ key (long pressure).



GRAPHIC ALTIMETER DISPLAY



THERMAL CENTERING DISPLAY

5.2 VARIOMETER

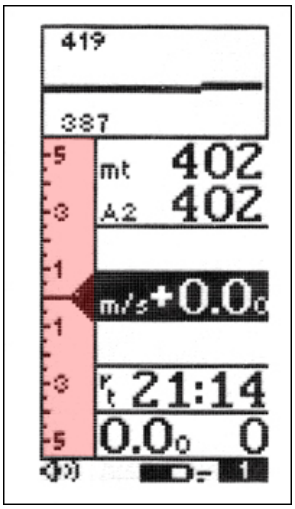
5.2.1 SUPERFAST INTELLIVARIO

- The Intellivario is a revolutionary system designed by Digifly which is based on the use of sophisticated digital filters. This results in a very sensitive vario and is immune to radio interference. All the variometric functions are subject to these filters.
- The Digifly instrument has a very fast pressure sensor and an excellent data acquisition system that allows the instrument to perform as a very fast and accurate vario (updated 20 times a second).

5.2.2 VARIO REACTIVITY

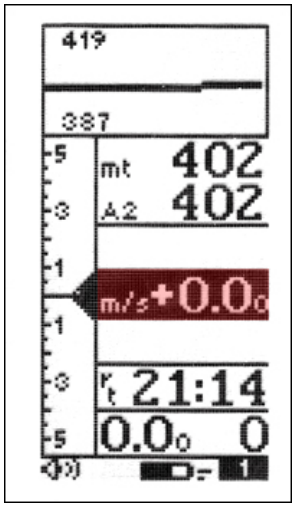
- To adjust the reactivity of the vario, go to (**MAIN SETUP \ n. 5 RVAR**). The default setting is 0.4 sec. To increase the reactivity of the vario reduce the value of this parameter. For a more damped response, increase this value.

5.2.3 ANALOGUE VARIO



- The long data field (highlighted here in red) on the left of the **Thermal Display** page shows the analogue vario value.
- The analogue vario is an instantaneous vario reading. This information is shown on the analogue display on the left of the screen by a bar graph, indicating lift or sink.
- The scale of the analogue vario can be adjusted to suit the conditions you are flying in. The default scale is 6m/s.
- To change the scale of the analogue vario, go to (**MAIN SETUP \ n. 7 FS_V**) and change the parameter from the default value "**MED**" (6m/s) to change to "**HIGH**" (12m/s), for very strong conditions or to "**LOW**" (1m/s) for very weak conditions.

5.2.4 INTEGRATED (AVERAGED) VARIO



- The integrated vario (highlighted here red) is an average vario reading. This time over which the reading is averaged is adjustable.
- The data in this display field is always “highlighted” to make reading in flight easier.
- You can change the integration interval by setting parameter (**MAIN SETUP \ n. 6 INTE**) between “**0**” and “**60**” seconds.
- It can be delayed or immediate. If you set a value that is too low, its value will be close to the instantaneous reading. Normally this is the most common setting. It can also be used for example to see if the rate of lift or sink is improving or getting worse. If the integrated vario reading over a number of seconds is higher than the actual reading, it means that you are doing worse than before.

5.2.5 ACOUSTIC VARIO

- The acoustic vario represents the instantaneous values of the vario with a modulated tone.
- The volume of the tone is adjustable over three levels “**HIGH**”, “**OFF**” & “**LOW**”, by pressing the key (long pressure). The volume level selected is shown by a change in the “speaker” graphic at the bottom of the screen.
- You can set the threshold level for the Digifly instrument to indicate lift, go to (**MAIN SETUP \ n. 2 V.UP**) and sink, go to (**MAIN SETUP \ n. 3 V.DN**).
- To change the vario tone based on your personal preferences, you can adjust the acoustic vario tone modulation, go to (**MAIN SETUP \ n. 4 TONE**).

5.2.6 VARIO SIMULATOR

- The vario simulator is very useful to check your acoustic vario settings without the need to test it in real flight.
- To activate the vario simulator go to (MAIN SETUP \ n. 8 SIMV) and select “ON”. Once in vario simulator mode is possible to change the vario value using the keys , .
- To deactivate the vario simulator go to (MAIN SETUP \ n. 8 SIMV) and select “OFF”. For safety reason the vario simulator is always turned off when you switch off the instrument.

5.3 AIR SPEED (WITH OPTIONAL AIR SPEED PROBE)

- The airspeed can be shown by the Digifly instrument.
- To display your air speed, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- The air speed reading can be shown in metric (km/h) or imperial (mph) units. To change the units of display, go to (**MAIN SETUP \ n. 29 U-SP**) and change to "**KMH**" or "**MPH**".
- If the air speed indicator is selected on the data field indicator the icon "**ieff Kmh As**" or "**ieff mph As**" will appear for one second.

- On the left of the air speed indicator the instant ground efficiency "**ieff**" is also displayed.
- To change the data fields with "AIR SPEED", press the , keys to highlight & select the data field you wish to adjust., then press the , key to select the data field "AIR SPEED".

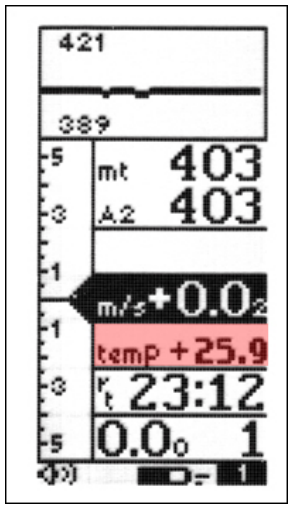
5.3.1 STALL ALARM

- To utilize the stall alarm function, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- To enable the stall alarm select (**MAIN SETUP \ n. 9 STAL**) with a value higher than 0.
- The stall alarm is always disabled when the air speed drops lower than 5 km/h.

5.3.2 AIR SPEED RECALIBRATION

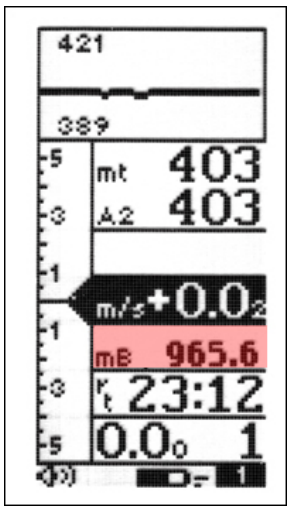
- If the air speed probe is showing inaccurate readings, it is possible to recalibrate the air speed probe, go to (**MAIN SETUP \ n. 11 KIAS**). An adjustment (in %) of the air speed reading can be made, (100%=no adjustment, 110%=increase, 90%=decrease).
- Incorrect recalibration will makes the air speed readings less accurate.

5.4 TEMPERATURE



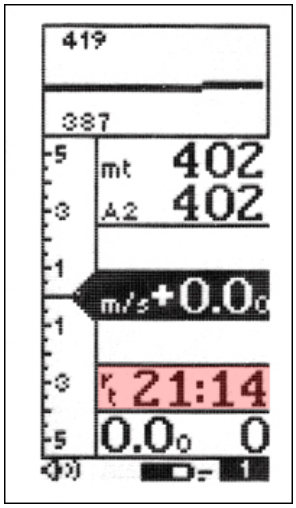
- The temperature can be shown by the Digifly instrument.
- The ambient temperature reading can be shown in metric (°C) or imperial (°F) units. To change the units of display, go to (**MAIN SETUP \ n. 30 U-TEM**) and change to "**CEL**" or "**FAR**".
- Temperature data can be shown in any of the 5 customizable display fields on the **Thermal Display** screen (highlighted here in red).
- To show the temperature data in any of these customizable fields, press the ▲, ▼ keys to highlight & select the data field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and a description of the data currently being shown is that field is shown for approx 3 seconds.
- To change the data you wish to display, press the ◄, ► key. Each time the data field is changed, the field briefly shows a description of the data type currently selected.
- It is possible to adjust the temperature units, go to (**MAIN SETUP \ n. 31 KTMP**).

5.5 BAROMETER



- The pressure can be shown by the Digifly instrument.
- The pressure data can be shown in any of the 5 customizable display fields on the **Thermal Display** screen (highlighted here in red).
- To show the pressure data in any of these customizable fields, press the ▲, ▼ keys to highlight & select the data field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and a description of the data currently being shown is that field is shown for approx 3 seconds.
- To change the data you wish to display, press the ◄, ► key. Each time the data field is changed, the field briefly shows a description of the data type currently selected.

5.6 TIME / CHRONOGRAPH



- The following time and chronograph information can be shown by the Digifly instrument:
    - "**rt**": UTC time.
    - "**ch**": Chronograph.
- Time or chronograph data can be shown in any of the 5 customizable display fields on the **Thermal Display** screen (highlighted here in red).
- To show additional time information in any of these customizable fields, press the ▲ , ▼ keys to highlight & select the data field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and a description of the data currently being shown is that field is shown for approx 3 seconds.
- To change the data you wish to display, press the ◀ , ▶ key. Each time the data field is changed, the field briefly shows a description of the data type currently selected.
- To zero the chronograph, press the ⧉ key (long press).
- The vario time and date are automatically synchronized with the GPS at start up.
- Adjust the time zone difference for your country go (**MAIN SETUP \ n. 15 UTCO**).
- To manually adjust the time and date, go to (**MAIN SETUP \ n. 16 HOUR**), (**MAIN SETUP \ n. 17 MIN**), (**MAIN SETUP \ n. 18 DAY**), (**MAIN SETUP \ n. 19 MONT**), (**MAIN SETUP \ n. 20 YEAR**).

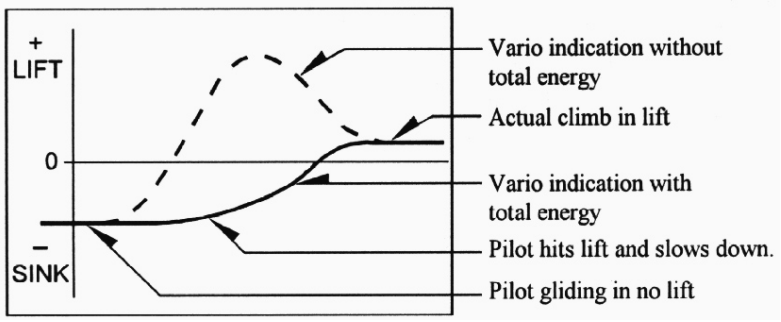
5.7 PILOT NAME & GLIDER DATA

- To set the pilot name, the glider type and the glider id, go (**MAIN SETUP \ n. 21 PILO**), (**MAIN SETUP \ n. 26 GTYP**), (**MAIN SETUP \ n. 27 GID**).

6 ADVANCED FUNCTIONS

6.1 TOTAL ENERGY COMPENSATION

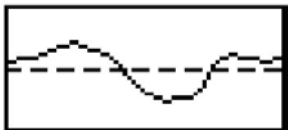
- Total energy compensation is the rate of change of atmospheric pressure and displays this as a vertical speed.
  If you slow down in flight, your glider will climb using the excessive kinetic energy. A "non-compensated" vario would interpret this as lift. Now, if you are flying quite fast and slow down when you enter a thermal, the vario reading gets rather difficult to interpret. Part of the lift reading is due to slowing down, and part is due to lift from the thermal. With total energy compensation, the part of the climb due to the change in velocity is ignored, allowing you to identify "real" thermals.
- To identify the correct total energy compensation value, an air speed probe must be connected to your vario. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- To determine the correct total energy compensation value, with an air speed probe connected, you should fly in calm air conditions and slow down as if you are entering a thermal. If the vario shows a change in lift, you have to increase the total energy compensation value, go to (**MAIN SETUP \ n. 10 TEC**). Then try again until the change in velocity isn't recorded as lift.



- A typical value for hang gliders is 65. The default setting of "**0**" deactivates the total energy compensation function.

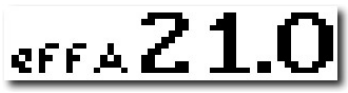
6.2 THERMAL CENTERING FUNCTION

- This is a live plot of your vario against time, it scrolls whilst you are flying. It will help you to see how wide the thermal is and how far you flew from the best lift you encountered. It is especially useful in weak conditions.
- To switch between the **Thermal Centering Function** and the **Graphic Altimeter** press the ▲ key (long pressure).



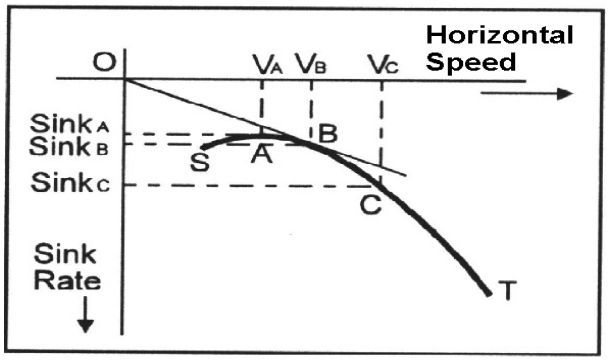
- The horizontal (x) scale, time (in minutes) can be changed, go to (**MAIN SETUP \ n. 13 BARX**).
- The vertical scale (y) height (in meters) can also be adjusted, go to (**MAIN SETUP \ n. 14 BARY**).

6.3 AIR EFFICIENCY (GLIDE RATIO)



- To utilize the air efficiency functions you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- The air efficiency indicates the current efficiency (glide ratio) related to the air.
- If your Air speed drops lower than 5km/h, the display is blank.
- To adjust the time over which efficiency is averaged, go to (**ADV. SETUP \ n. 4 EFF**).
- To show "instant Air Efficiency" information in any of these customizable fields, press the ▲ , ▼ keys to highlight & select the data field you wish to adjust.
- As you scroll up or down, the fields that you can customize are highlighted (inverted) and a description of the data currently being shown is that field is shown for approx 3 seconds.
- To change the data you wish to display, press the ◀ , ▶ keys. Each time the data field is changed, the field briefly shows a description of the data type currently selected.

6.4 POLAR DATA



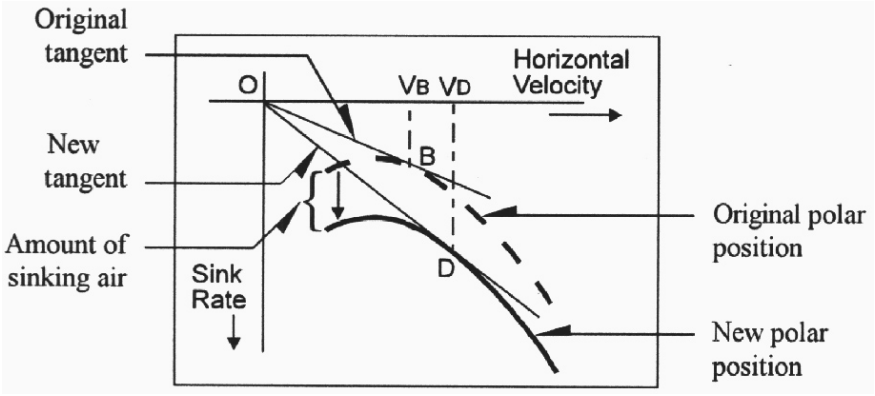
- To utilize the polar data functions, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- A polar curve (shown in bold on the figure) is a graph of your glider's sink rate over its speed range.
- The glider's stall speed is shown by at point **S** and the glider's max speed at point **T** on the graph.
- On the graph, you can also see three pairs of relative speed readings and sink rates. At

point **A**, you can see that the lowest sink rate achieved is at the top of the curve. Therefore **SinkA** is the minimum sink rate and **VA** is the speed at which this is achieved.

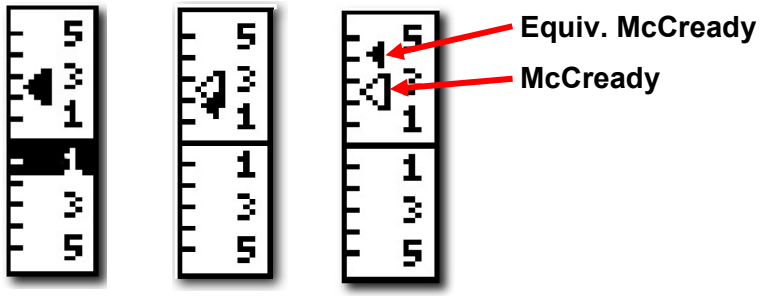
- The glide ratio is the ratio between the glider's horizontal speed and the sink rate. To find the best glide rate on the graph, a straight line is from the origin of the graph (point **O**) to the tangent of the curve (point **B**). The speed to fly at to achieve the best glide (air related) is therefore **VB** and the glide ratio is **VB/SinkB**.
- On your instrument you can insert three different polars, go to (**ADVANCED SETUP \ n. 9/17 PX-A/B/C**) and choose which polar to use, go to (**ADVANCED SETUP \ n. 8 POLA**).
- If this parameter (**ADVANCED SETUP \ n. 8 POLA**) is set to "**OFF**", all information relating to **McCready**, **McCready Equivalent, Thermal Sniffer** is not displayed on the instrument, creating a cleaner display for users not needing this functionality.
- There are three polars preloaded, (2 for hang gliders and 1 for a paraglider). To see the three default polar curves and to calculate your own, use the Digifly Excel software available from the Digifly web site (**www.digifly.com**).
- We suggest that you insert your own polar curve data which best reflects the actual performance of your glider.

6.5 SPEED TO FLY

- To utilize the speed to fly functions you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- If this parameter (**ADVANCED SETUP \ n. 8 POLA**) is set to "**OFF**", all information relating to **McCready**, **McCready Equivalent, Thermal Sniffer** is not displayed on the instrument, creating a cleaner display for users not needing this functionality.
- The speed to fly value is the optimum flying speed to obtain the best glide ratio. This value depends on performance of your glider as well as vertical and horizontal airflow. In calm air, the optimum flying speed is the same as the best glide speed (point **B** on the figure below).

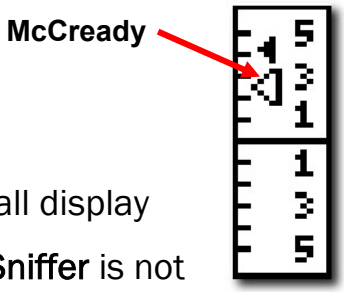


- On the figure above, you can see different values of speed to fly value related to different flight conditions.
- The X-axis shows horizontal speed, the Y-axis shows sink rate. In a head wind or sink conditions, the best glide speed increases. In order to find the optimum speed to fly value in sink, you simply add the sink of the air to the polar of your glider, drawing a new polar and a new tangent line from the initial point of axes. The new tangent (point **D**) meets the polar at the point giving a higher optimum flying speed **VD**.
- To obtain the correct "Speed to fly" you have to adjust your speed so both McCready arrows are in the same position.



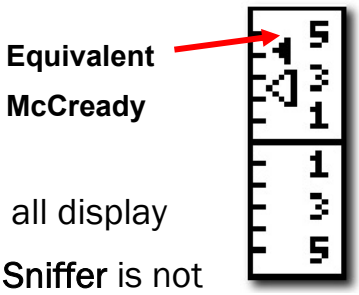
- Speed to fly indications -

6.6 McCREADY



- To utilize the McCready functions, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- If this parameter (**ADVANCED SETUP \ n. 8 POLA**) is set to "**OFF**", all display information relating to **McCready**, **McCready Equivalent, Thermal Sniffer** is not displayed on the instrument, creating a cleaner display for users not needing this functionality.
- The McCready value is the average lift value from last 10 minutes. The average time can be adjusted, go to (**ADVANCED SETUP \ n. 17 MCRA**).

6.7 EQUIVALENT McCREADY



- To utilize the McCready functions, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- If this parameter (**ADVANCED SETUP \ n. 8 POLA**) is set to "**OFF**", all display information relating to **McCready**, **McCready Equivalent, Thermal Sniffer** is not displayed on the instrument, creating a cleaner display for users not needing this functionality.
- This value indicates the Equivalent McCready value, using the actual air speed as the optimal speed.
- The Equivalent McCready indicator is a kind of "reverse" speed to fly calculation. It tells you that flying at the current air speed you are assuming that the average thermal value of the flight is the value indicated from the Equivalent McCready.
- To set the average of the Equivalent McCready, go to (**ADVANCED SETUP \ n. 18 MCRE**).

6.8 NETTO VARIO

- To utilize the netto vario function, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- If this parameter (**ADVANCED SETUP \ n. 8 POLA**) is set to "**OFF**", the netto display vario is disabled and all display information relating to **McCready**, **McCready Equivalent, Thermal Sniffer** is not displayed on the instrument, creating a cleaner display for users not needing this functionality.
- The netto vario indicates the vertical speed of the rising or sinking air mass you are flying through and is displayed with black digits with a white background (this allows it to be distinguished from the standard vario that is displayed in "reverse" mode).
- To use this function, you also need to set up the polar curve of your glider.

6.9 THERMAL SNIFFER

- To utilize the thermal sniffer function, you must have an air speed probe connected. The optional air speed probe should be plugged in to the right hand socket on the bottom of the vario.
- If this parameter (**ADVANCED SETUP \ n. 8 POLA**) is set to "**OFF**", all display information relating to **McCready**, **McCready Equivalent**, **Thermal Sniffer** is not displayed on the instrument, creating a cleaner display for users not needing this functionality.
- The thermal sniffer is an innovative function that helps you to detect a thermal early.
- It alerts you with a sound and the popup message "**THERMAL**" when you are in a thermal but your vario is still indicating sink because your sink rate is higher than the speed of the rising air.
- This function uses two parameters, the thermal strength and the time over which the themal must occur.
- To set the thermal detection parameters, go to (**ADVANCED SETUP \ n. 2 THEV)** and (**ADVANCED SETUP \ n. 3 THET**) to adjust the time over which a change in height is required for detection of a thermal.
- To use this function you need to set up the polar of your glider.

7 GPS FUNCTIONS

7.1 INTEGRATED 20 CHANNEL GPS RECEIVER (Leonardo Models)

- The Digifly **Leonardo** contains a high sensitivity 20 parallel channel GPS receiver.
- To turn off the GPS, press the ON-OFF key. A confirming message "**OFF GPS?** " is shown and a confirmation of "**YES**" or "**NO**" is required. When the GPS is turned "**OFF**" or there is no GPS reception, on the **Glide Compass** and **Glider Plotter** screens, a the message "**NO GPS SIGNAL**" is shown.
- To turn "**ON**" the GPS, press the ON-OFF key. A confirming message "**ON GPS?** " is shown and a confirmation of "**YES**" or "**NO**" is required.

7.2 GPS STATUS INFORMATION

- The GPS status icon indicates the strength of the GPS signal (either 2 or 3 bars).
- 2 bars = poor GPS reception ; 3 bars = good GPS reception.

- The GPS status icon shown at the bottom of all display pages has different meanings:

  1) GPS icon on = GPS signal is valid (current GPS position is provided).

  2) GPS icon blinking = GPS signal not obtained (the current GPS position is not provided).

  3) GPS icon off = GPS receiver is turned off or very low signal.

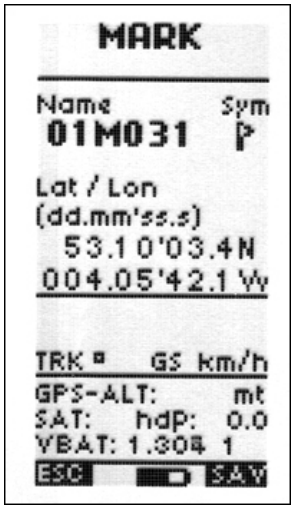
7.3 POWER SAVING MODES (Leonardo Models)

- The GPS receiver in the Digifly **Leonardo** has 3 power saving modes. Go to (**ADVANCED SETUP \ n. 7 POWE**).
- **"STD"**: The GPS is activated every 1 second, with no power saving.
- "**ECO**": The GPS is activated every 2 seconds, except when near Waypoints or in a turn when the GPS is activated every 1 second. In the "**ECO**" mode the **Leonardo** battery life is increased by 60% compared to having the no power saving feature enabled
- "**EC2**": The GPS is activated every 2 second except when near Waypoints, when the GPS is activated every 1 second. In the "**EC2**" mode the **Leonardo** battery life is increased by 80% compared to having no power saving feature enabled. Note that the "**EC2**" mode reduces the navigation reactivity a little when the pilot is turning.

7.4 GPS SIGNAL AND BATTERY LIFE (Leonardo Models)

- With the GPS power saving mode set to "**STD**" (**ADVANCED SETUP \ n. 7 POWE**). The integrated GPS receiver in the Digifly **Leonardo** consumes 90% of the total current of the instrument and consumption depends on the strength of the satellite reception. During outdoor usage with full sky visibility (3 bars) you can achieve 30 hours of battery life. During indoor use, with poor sky visibility (2 bars) the GPS receiver switches to high power mode and consumes up to two times more current. As a result of poor satellite reception, the expected battery life can be reduced to 15 hours or even less.
- With the GPS power saving mode set to "**ECO**" (**ADVANCED SETUP \ n. 7 POWE**). During outdoor usage with full sky visibility (3 bars) you can achieve 40 hours of battery life.
- With the GPS power saving mode set to "**EC2**" (**ADVANCED SETUP \ n. 7 POWE**). During outdoor usage with full sky visibility (3 bars) you can achieve 50 hours of battery life.

7.5 GPS INFORMATION DISPLAY



- To view the GPS information display, press the **MENU** key (long press).
- On this page you can read in real time: Waypoint name and symbol, Latitude, Longitude, GPS Direction ("**TRK**"), Ground Speed ("**GS**" in km/h), GPS Altitude ("**GPS-ALT**" in mt), Satellite Number ("**SAT**") and the strength of the GPS Signal ("**hdp**"), and Battery Voltage ("**VBAT**").

7.6 LATITUDE & LONGITUDE COORDINATES

- Latitude and Longitude are referenced with respect to the WGS84 Map Datum.

7.7 GPS ALTITUDE

- GPS Altitude is the altitude above sea level ("**AG**" icon).

7.8 GROUND SPEED GPS

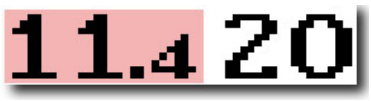
- Ground Speed is the speed over the ground ("**Gs**" icon).

7.9 GPS DIRECTION (TRK)

- GPS Direction ("**TRK**") is the direction of movement relative to the ground.

7.10 GROUND EFFICIENCY (GLIDE RATIO)

- When you select the “air speed” or “ground speed”, on the left side of this data field is displayed the ground efficiency .
- If your ground speed drops to lower than 2km/h or the GPS fix is not valid, the left indicator displayed as “ 0.0 0 ”.

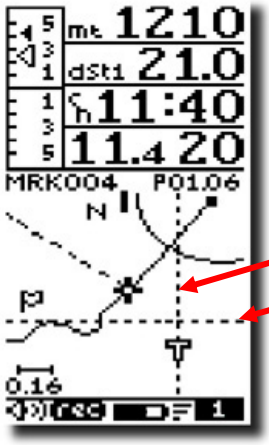


- If you are in a lift , the efficiency indicator is in reverse and shows the average efficiency calculated in the last glide , go to (**ADVANCED SETUP \ n. 5 EFFA**) to set the time over which the average efficiency is calculated.
- The average efficiency value is very important because is the value used by the glide computer.

7.11 WIND SPEED AND DIRECTION INDICATION USING GPS

- The wind speed and direction are automatically calculated and displayed using GPS informations of the GPS Direction (“**TRK**”) and the GPS ground speed (“**Gs**”) values.
- to determine the wind speed and direction, you should make a “normal” turn, that is neither too tight, nor too wide.
- It is also important to maintain constant airspeed during the turn.
- For an accurate calculation, a 360° turn must be completed.
- On the **Glide Compass** display screen and the **Glide Plotter** display screen, the flag icon shows you the wind direction.

GLIDE COMPASS DISPLAY



- HSI BRG1
- HSI (H1)

GLIDE PLOTTER DISPLAY

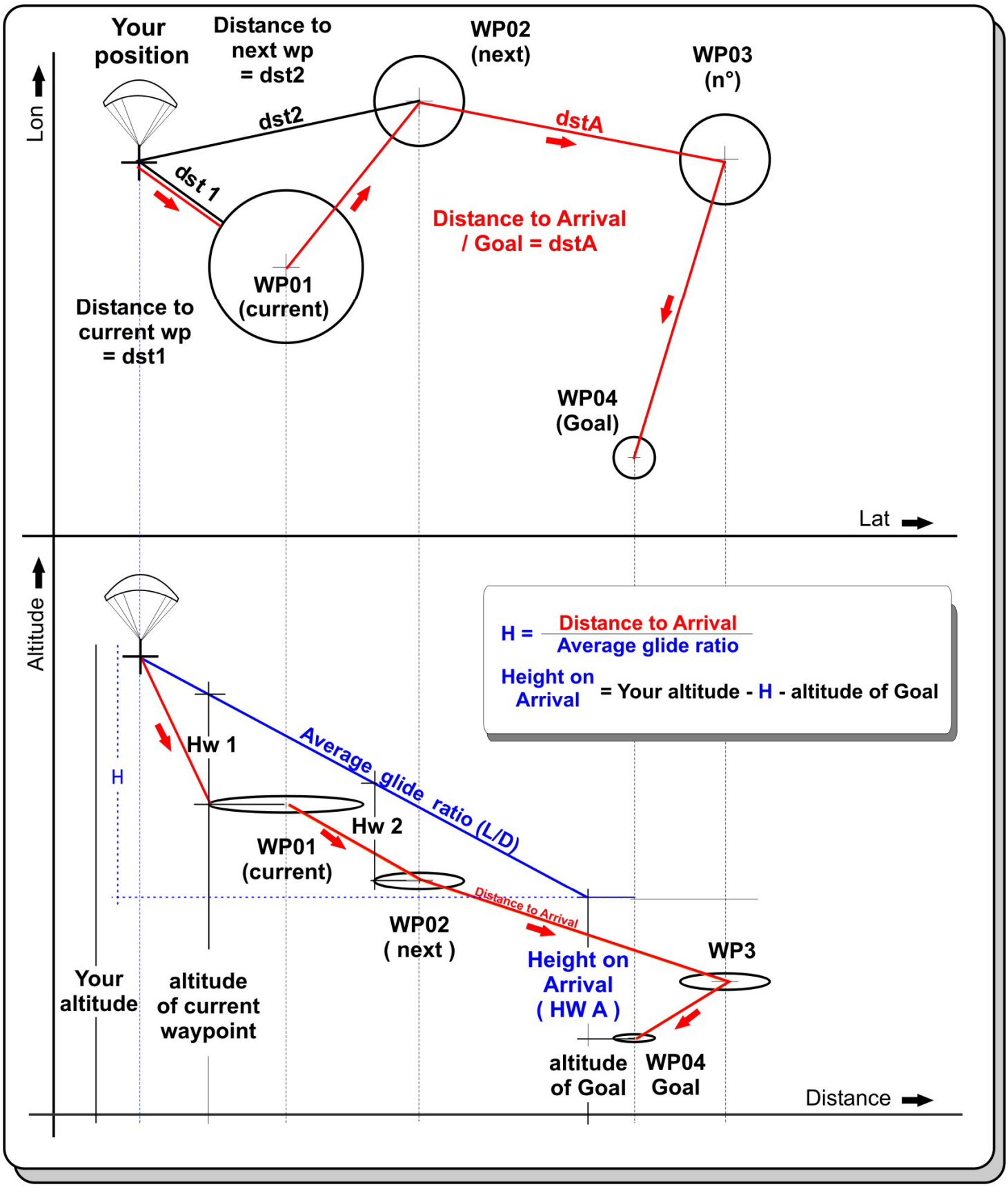
7.12 HSI GRAPHICS INDICATION

- A new instrument on the Glide Plotter Display screen for a fast and intuitive navigation.
- It is a dotted cross hair that dynamically and automatically tells you your vertical and horizontal track error related to the current waypoint WP1 (altitude range +/- 300mt) (bearing range +/- 60°) . Note that this function is not activated if the current waypoint is the Start Pilon.
- For optimal navigation the cross hair have to be at the same point of your current position icon.

7.13 LAST THERMAL INFORMATIONS (WITH GPS)

- Indicates the direction "**brt**", distance "**dstT**", required efficiency "**ertT**" and gain altitude "**A3**" to the last thermal.
- To set the thermal detection parameters, go to (**ADVANCED SETUP \ n. 2 THEV**) and (**ADVANCED SETUP \ n. 3 THET**) to adjust the time over which a change in height is required for detection of a thermal.

7.14 DIRECTION, DISTANCE AND HEIGHT TO WAYPOINTS



- This is a powerful feature that displays the direction, distance and the estimated height of arrival over the current Waypoint (**H1**); next Waypoint (**H2**) and the Arrival Waypoint (**HA**). To view this data a Route has to be activated.

- The height over the current Waypoint (**H1**) is based on the following information: Altimeter **A1**, Distance to Waypoint, Waypoint Altitude and Average Glide Ratio (ground related).
- The Waypoint Altitude has to be included in the Waypoint name in the format:
    - **aaaNNN** or edited when a mark position is stored.
    - **aaa** = 3 alphanumeric characters with the name of the Waypoint.
    - **NNN** = altitude above sea level in tens of meters.
      e.g. MIL157 indicates that the Waypoint MIL has the altitude of 1570 m above sea level.
- The Average Glide Ratio is continuously calculated during a glide and stored as soon as a lift is reached. It is displayed in place of real time glide ratio when you are in a lift.
- To change the time (in seconds) over which the Glide Ratio is averaged, go (**ADVANCED SETUP \ n. 5 EFFA**).

7.15 REQUIRED EFFICIENCY TO THE CURRENT/NEXT WAYPOINT AND TO ARRIVAL AT GOAL

- This is the estimated efficiency (glide ratio or L/D) required to arrive to the Waypoint and is calculated only if navigation to a Waypoint or Route has been activated.
- This information is shown by the "**efr1**", "**efr2**", "**efrA**" data values on the 3 main display screens (**Thermal Display, Glider Compass** and **Glide Plotter**).

7.16 DIRECTION TO CURRENT AND NEXT WAYPOINT

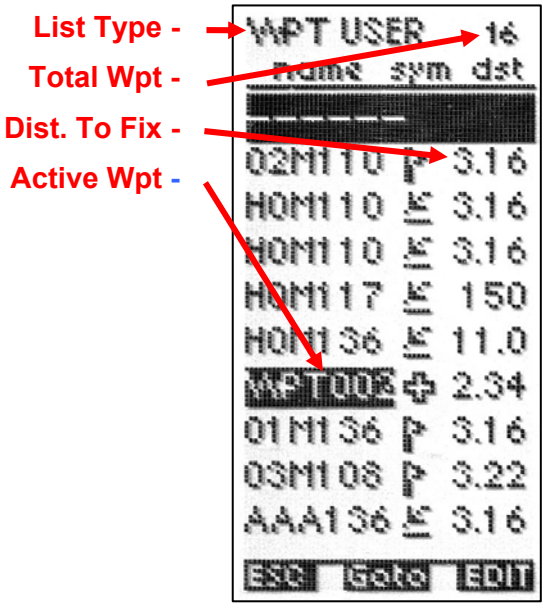
- There are two different direction indications from your current position:
    - The "Direction to Current Waypoint".
    - The "Direction to Next Waypoint".

7.17 SAFE LANDING GLIDE CONE INDICATION

- This function is activated when the Waypoint has the Landing Icon selected.

- If you are positioned within the circle, with your current glide, you should be able to reach the landing area as shown in the figure.

7.18 WAYPOINT MANAGEMENT



- The Digifly instrument stores two separate Waypoint lists.
- The Competition Waypoints list ("**WPT COMP**") and the User Waypoints list ("**WPT USER**") can each store a maximum of 200 Waypoints.
- To view the Waypoint lists, press the MENU key (function "**MEN**") and select the "**WPT COMP**" or "**WPT USER**" lists using the keys) using the arrow keys ▲, ▼ and view by pressing the press the MENU key (function "**ENT**").
- To scroll through the Waypoint lists, press the arrow keys ▲, ▼ or the 🔊 or ⧉ keys for fast scrolling. Waypoints are sorted alphabetically.
- Competition Waypoints can be used only in the Competition Route (**Rt 1 Comp**) and User Waypoints can be used only in User Routes (**Rt 2 User - Rt 12 User**).
- Waypoints can be managed manually through the Digifly instrument or with an external Windows program running on a PC.

7.18.1 MANUALLY CREATE A NEW WAYPOINT

- To create a new Waypoint, move the cursor to the first line of the Waypoint list (the empty line) using the arrow keys ▲, ▼ then press the MENU key (function "**EDIT**"), the Waypoint Data (**WPT DATA**) screen appears with these fields to be completed:
- **Name:** - max 6 characters.
- **Sym:** - there are 6 graphic symbols (icons) available to choose from.

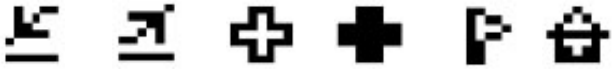
- **Lat / Lon:** Longitude and Latitude. Each Waypoint can be individually edited with its own coordinate System (Degrees, Minutes and Seconds (dd° mm' ss.s), Degrees and Minutes (dd° mm.mmm') or UTM Universal Transverse Mercator (utm x, y, zone).

7.18.2 CREATE NEW WAYPOINT WITH CURRENT POSITION (MARK)

- When the GPS has acquired a valid position (**UTC sync**) is possible to capture your current GPS position using the "**MARK**" function.
- Press the MENU key (long press) to go to "**MARK**" page. To save your position, press the MENU key (function "**SAV**"). You are asked to select where your want to save the Waypoint you have just created it. You may save the Waypoint in the Competition Waypoint list ("**WPT COMP**") or in the User Waypoint list ("**WPT USER**").

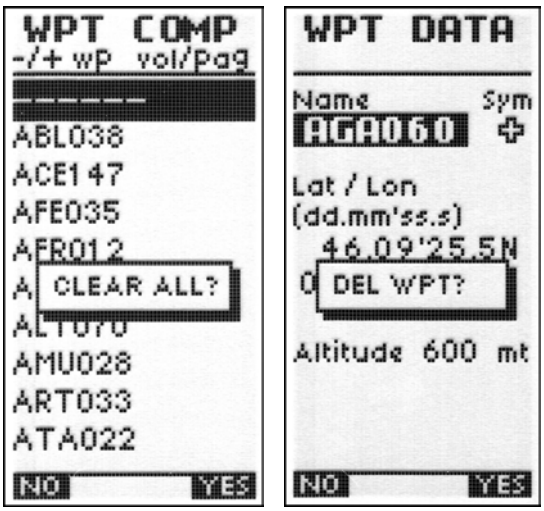
7.18.3 EDIT WAYPOINT

- To edit an existing Waypoint, scroll though the list using the arrow keys ▲, ▼ until the cursor is on the desired Waypoint. Press the MENU key (function "**EDIT**"), the Waypoint Data screen then appears with these fields to be completed:
- **Name**: max 6 characters
- **Sym**: there are 6 graphic symbols (icons) available to choose from.



- **Lat / Lon**: Longitude and Latitude. Each Waypoint can be individually edited with its own coordinate System (Degrees, Minutes and Seconds (dd° mm' ss.s), Degrees and Minutes (dd° mm.mmm') or UTM Universal Transverse Mercator (utm x, y, zone).

7.18.4 DELETE WAYPOINT



- To delete all Waypoints: press the GOTO key (long press) and confirm with "**YES**".

- To delete a single Waypoint, scroll though the list using the arrow keys ▲, ▼ until the cursor is on the desired Waypoint. Press the MENU key (function "**EDIT**"), the Waypoint Data screen then appears. Press the GOTO key (long press) and confirm with "**YES**".

7.18.5 NAVIGATE TO A WAYPOINT (GOTO)

- To quickly navigate to a Waypoint press the GOTO key and select if you wish to view Waypoints from the "**COMP**" or "**USER**" Waypoint lists. Use the arrow keys ▲ , ▼ to highlight the desired Waypoint and press the GOTO key to select, and confirm with "**YES**".

7.18.6 CREATE HOME WAYPOINT

- To quickly mark your current position as a Waypoint, mark the position as "**HOMxxx**" in the Waypoint list and automatically activate it as an active Waypoint, press the MENU key (extra long pressure). A confirming message is shown "**ACTIVE MOB**" then "**NEAR WPT**" is shown.

7.19 ROUTE MANAGEMENT

- The Digifly instrument can store up to 12 Routes with 20 Waypoints on each Route.
- A Route allows you to automatically navigate to all Waypoints stored in it.
- The first Route shown is the "**Rt 1 Comp**" (Competition) Route. To scroll through & view the other routes ("**Rt 2 User**" to "**Rt 12 User**") use the keys 🔊 , ⧉.
- At the bottom of the Route screen, the total distance of the Route is shown in (in km).
- The first Route (**Rt 1 Comp**) is the special Route for Competition use and only works with the Waypoints in the Competition list ("**WPT COMP**").
- The other Routes (**Rt 2 User** to **Rt 12 User**) are User Routes and they only work with the User Waypoint list ("**WPT USER**").
- Routes on the Digifly instrument can be managed manually or with an external Windows program running on a PC.

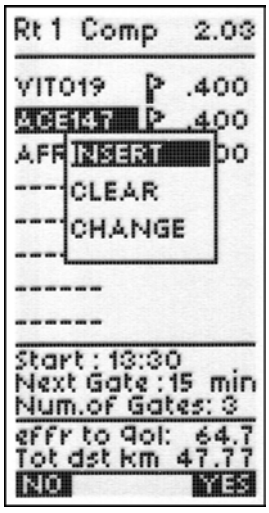
7.19.1 INSERT WAYPOINTS IN AN EMPTY ROUTE

- To insert Waypoints in an empty Route, press the MENU key (function "EDIT"). The first Waypoint of the list appears, scroll trough the Waypoint list using the arrow keys ▲, ▼ and then press the MENU key (function "SAVE").

7.19.2 INSERT A WAYPOINT AT THE LAST POSITION OF THE ROUTE

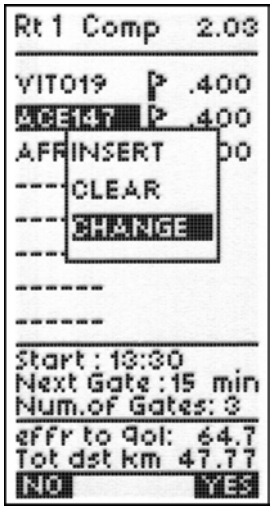
- Scroll to the last position on the Route you want to add a Waypoint to using the arrow keys ▲, ▼ and then press the MENU key (function "EDIT"). The first Waypoint on the Waypoint list appears. Scroll trough the Waypoint list using the arrow keys ▲, ▼ and then press the MENU key (function "SAVE").

7.19.3 INSERT A WAYPOINT IN A ROUTE WITH WAYPOINTS



- Scroll to the desired position using the arrow keys ▲, ▼ and then press the MENU key (function "EDIT").
- From the drop-down menu select the "INSERT" option with the ▲, ▼ keys and confirm with "YES".
- The first Waypoint in the Waypoint list appears, scroll through the Waypoint list using the arrow keys ▲, ▼ and then press the MENU key (function "SAVE").

7.19.4 CHANGE WAYPOINTS IN A ROUTE



- To change a Waypoint in a Route scroll to the desired position using the arrow keys ▲, ▼ and then press the MENU key (function "EDIT").
- From the drop-down menu select the "CHANGE" option with the ▲, ▼ keys and confirm with "YES".
- The current Waypoint on the Waypoint list a appears, scroll through the Waypoint list using the arrow keys ▲, ▼ and then press the MENU key (function "SAVE").

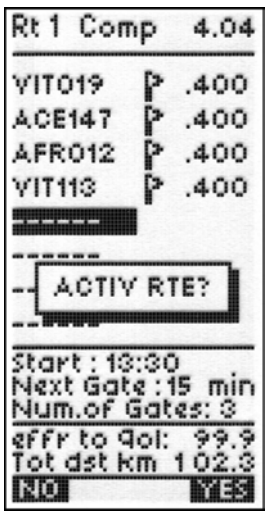
7.19.5 DELETE WAYPOINTS IN A ROUTE

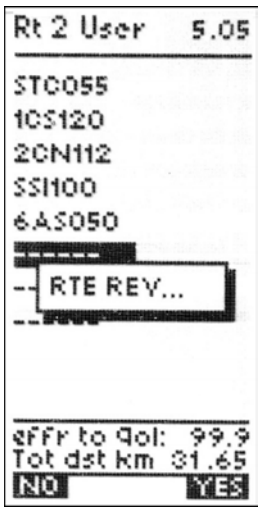
- To delete all Waypoints in a Route press the GOTO key (long press) and confirm with "**YES**".

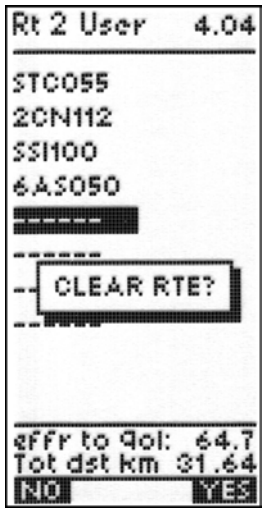
- To delete a Waypoint in a Route, scroll to the desired position using the arrow keys ▲, ▼ then press the MENU key (function "**EDIT**").
- From the drop-down menu select the "**CLEAR**" function with the ▲, ▼ keys and confirm with "**YES**".

7.19.6 ACTIVATE / DEACTIVATE / REVERSE / CLEAR A ROUTE

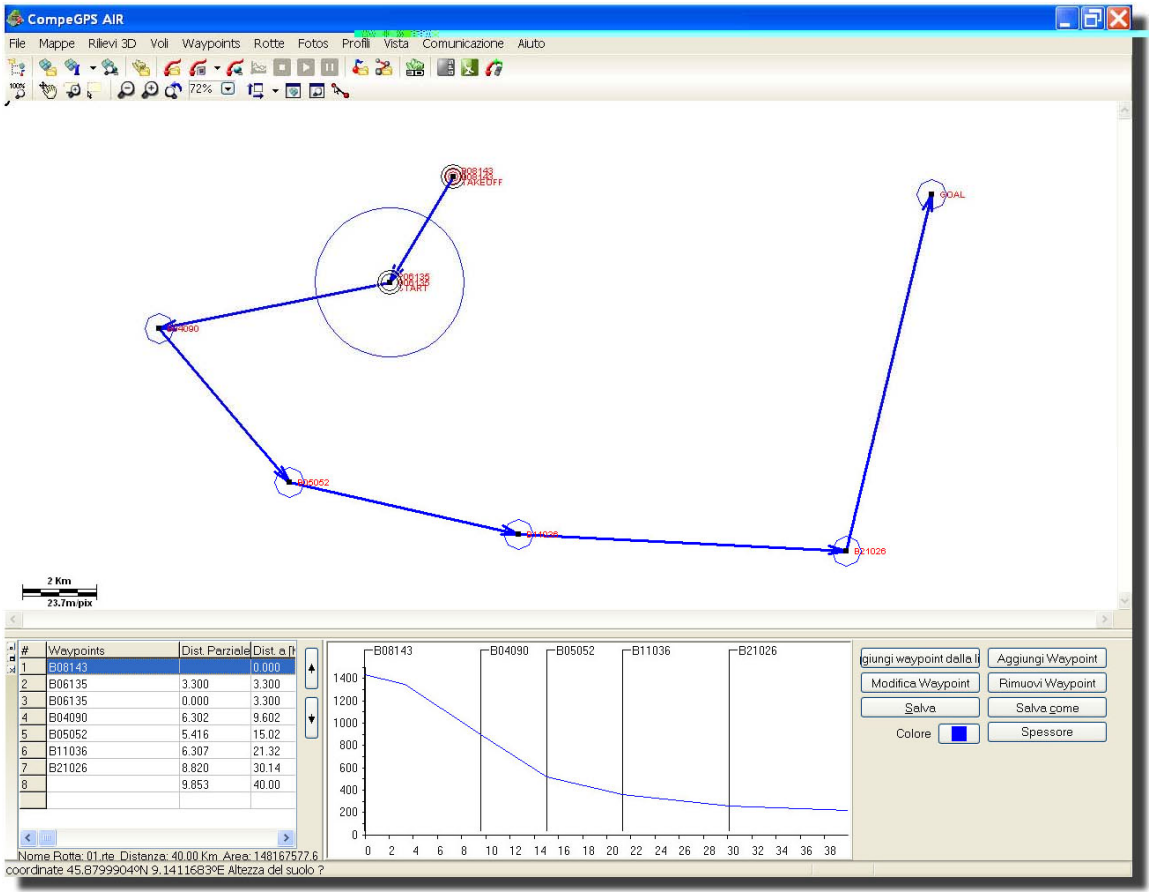
- To activate a Route press the GOTO key and confirm with "**YES**".
- To deactivate a Route press the GOTO key and confirm with "**YES**".
- To reverse a Route press the ⧉ key (long press).
- To clear a Route press the GOTO key (long press) and confirm with "**YES**".







7.20 COMPETITION ROUTE



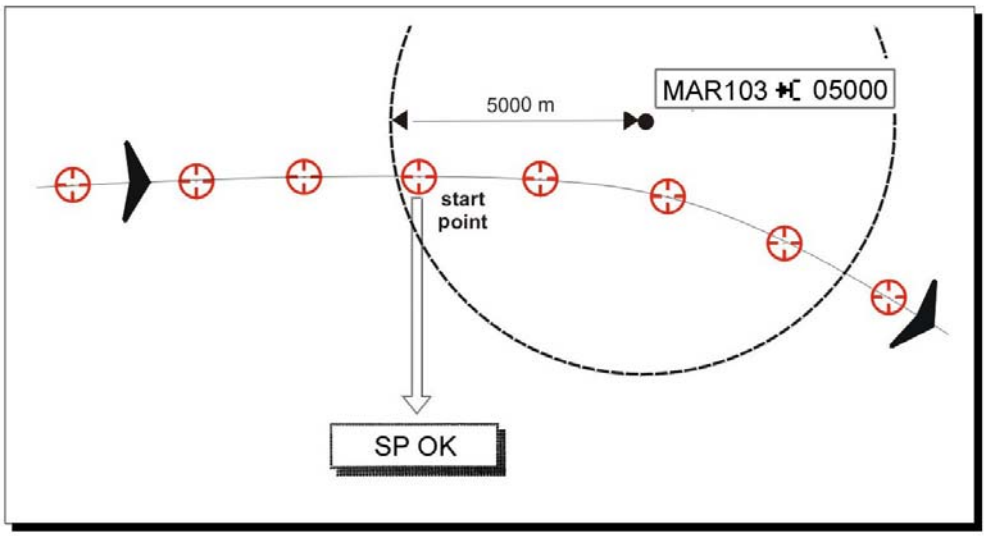
- The Digifly instrument automatically manages Waypoint navigation for competitions.
- For competitions use, the Digifly instrument has a special Route (**Rt 1 Comp**) with options dedicated to competition rules.
- The 2 images show the same Route on the Digifly instrument and COMPEGPS Air

7.20.1 SETUP THE COMPETITION ROUTE (Rt 1 Comp)

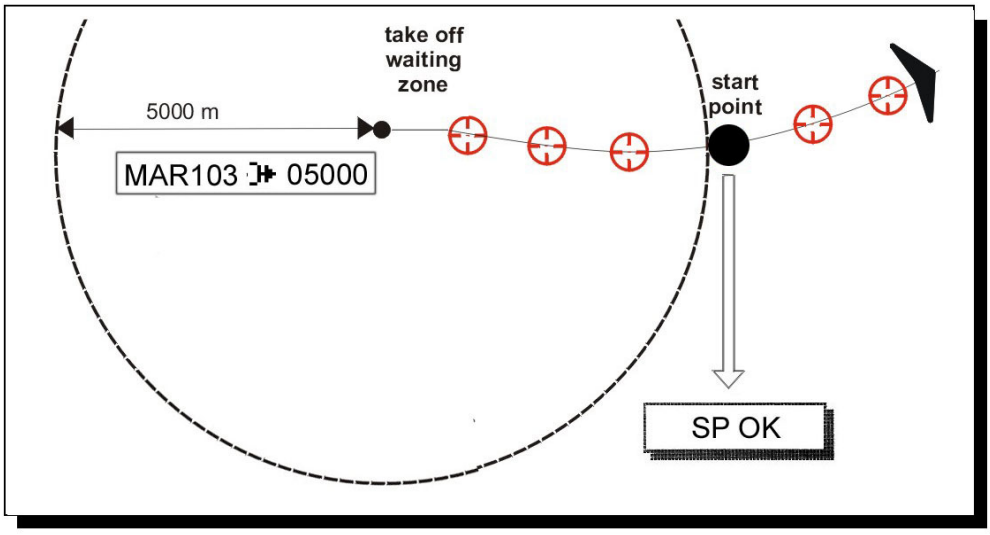
- Insert in the Competition Route (**Rt 1 Comp**) the Waypoints required for the current task. Each Waypoint with its own name, icon and radius (adjustable from 0 to 60,000 mt).
- Each Waypoint in the Competition Route has more icon choices than the Waypoints available to the User Routes.

- Waypoints may also include numbers and letters so it will possible for instance to follow the Route on the **Glide Plotter** screen with Waypoints in numerical order.

- Select the correct Start Pylon icon for the start Pylon Waypoint (any Waypoint can be selected):
- = start pylon validation entering into the circle.



- = start pylon validation exiting from the circle.



- The Start pylon function is only activated if one of these two start pylon icons is selected.
- If a Waypoint is selected as the Start Pylon, it will be shown on the **Glide Plotter** screen plotter with the "**S**" symbol.

- To edit Start Pylon Time Gate go to Route Display (**Rt Comp 1**) and using the arrow keys ▲, ▼ select fields “start /next gate/num of gate” then press the **MENU** key (function “**EDIT**”).
  n°1 SGhh = Hour to start, **n°2 SGmm** = minutes to start, **n°3 SGst** = Next Start Pylon Time Gate Interval in minutes (if necessary), **n°4 SGnm** = Number of Start Pylon next Gates.

- On the Competition Route Display (**Rt Comp 1**) there are 2 indicators:
  - “**effr to gol**” - The efficiency required to arrive at goal.
  - “**Tot dst km**” - Total distance of the Route.
- Confirm on the Competition Route page (**Rt 1 Comp**) that all information has been correctly entered and then press the **GOTO** key to activate the Route. Now you are ready to navigate.

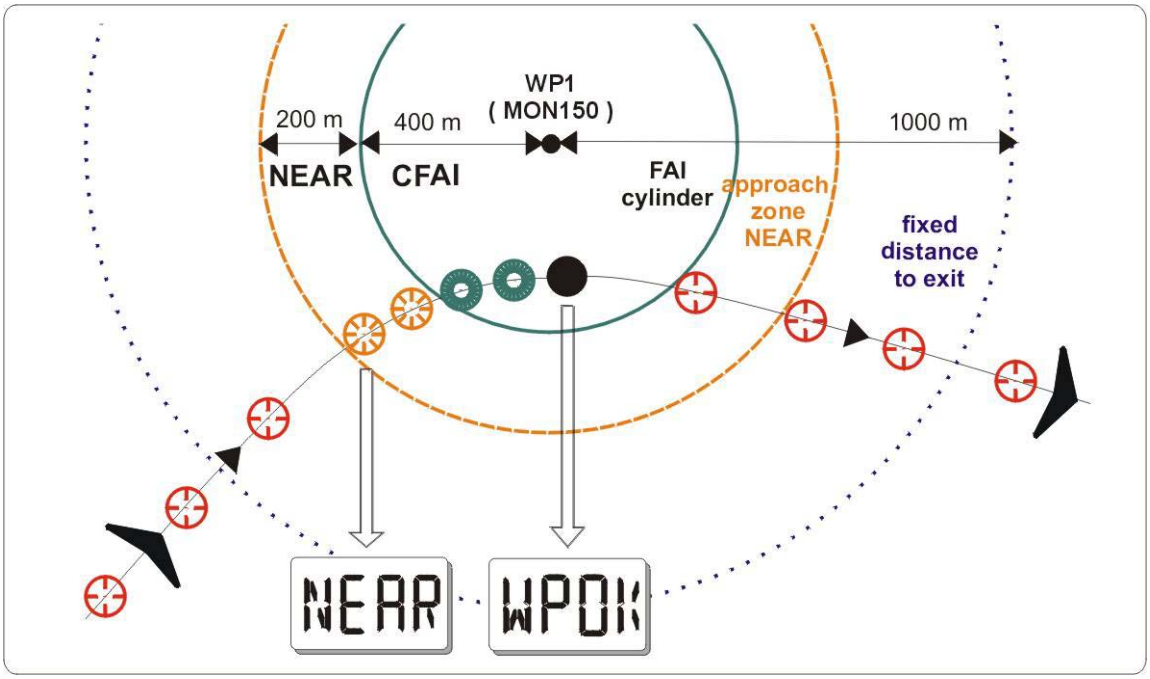
7.20.2 START PYLON NAVIGATION

- If the current Waypoint is a Start Pylon, the message “START PILON” appears on the glide pages. 5 minutes before the Start Pylon Absolute Time Gate, the instrument will automatically switch the time display (the fifth in the **Thermal Display** page and the third in the **Glide Compass** and **Glide Plotter Display** screen) to the “Remaining count down timer to Start Pylon Time Gate” (Timer Start “**es**”) display.
- Additionally. if the current waypoint is a Start Pylon, the Glide Plotter Display automatically switches first three instrument displays to “dst1”, er0” and “es” and also disables the HSI cross hair.
- When the “Remaining count down Timer to start pylon time gate” (Timer Start “**es**”) reach “**0**” it starts to flash and a popup message “**Gate Opened**” with long beep alerts to inform the pilot that the time gate has opened.

- At this point, if the parameter "**SGnm**" is bigger than "**0**", is possible to switch to the next start time gate with a long press of the GOTO key.
- When the time gate has opened, you are allowed to cross the start Pylon circle (in or out depending on the start pylon icon selected). When you across the circle on the correct side a popup message "**Start is OK**" appears, the Chrono "**ch**" is automatically zeroed and the Route navigation automatically jumps to the next Waypoint.
- If you across the Start Pylon circle earlier than the Start time gate has opened, the distance indicator in the circle "**dis1**" is reversed, to alert you that you are on the wrong side.
- When your distance on the wrong side of the Start Pylon becomes greater than 500mt a popup message "**Wrong Side**" appears.
- When you are at the start Plyon on an active Route, you can jump to the next start time gate (if available) by pressing the GOTO key (long press).

7.20.3 FAI CYLINDER NAVIGATION

- If the current Waypoint is a FAI Cylinder Turnpoint, the Digifly instrument will guide you to the Waypoint giving you continuous information about your position, the distance and direction to the Waypoint.



- When you arrive near the FAI Cylinder the Digifly instrument will alert you with a sound, a pop-up message "**NEAR**" and the flight recorder rate is automatically increased to 1 data point per second. To change Near value, go to Route Display (**Rt Comp 1**) and using the arrow keys ▲, ▼ select fields "start /next gate/num of gate" then press the **MENU** key (function "**EDIT**"). Here, using the arrow keys ▲, ▼ select NEAR parameter (n°5) and press the **MENU** key to edit value.
- FAI Cylinder Validation. When you arrive in the FAI Cylinder (the distance to the Waypoint is less than the radius) the Digifly instrument warns you with a sound, a pop-up message "**WPOK**" and the flight recorder rate returns to the setup value (**MAIN SETUP \ n. 24 RECR**).
- The cylinder radius can be adjusted in the Competition Route (**Rt 1 Comp**). Scroll to the desired Waypoint using the arrow keys ▲, ▼ Press the ▶| key to select the cylinder radius column. Press the **MENU** key (function "**EDIT**") and increase or decrease the cylinder radius with the ▲, ▼ arrow keys. To save your changes, with the press the **MENU** key.

7.20.4 CHANGE WAYPOINT ICON ON COMPETITION ROUTE

- From the Competition Route, scroll to the Waypoint you wish to edit with the arrow keys ▲, ▼. Press the **MENU** key (function "**EDIT**") to edit and press the ▶| key to select the icon column. To change the icon, press the **MENU** key (function "**EDIT**") and select a new icon using the arrow keys ▲, ▼. To save your changes, with the press the **MENU** key.

7.20.5 MANUALLY JUMP TO PREVIOUS/NEXT WAYPOINT

- To manually jump to previous or next Waypoint on the current active Route, press the arrow |◀, ▶| keys (long press).

8 FLIGHT RECORDER

- When the Digifly instrument is recoding a flight, the record icon in shown at the bottom of the screen.
- If the recorder starts before the “UTC SYNC” had been obtained, it records a flight in “2D” using the barometric altitude and the “**R2d**" icon is shown.
- While recording in “2D” mode, if a valid GPS position had been obtained, the recorder starts to record a new flight in “3D” mode and the record icon is at the bottom of the screen.
- In order to respect the FAI rules access to the “**MAIN SETUP**” menu on the Digifly instrument is blocked when the flight recorder has been activated.

8.1 ACTIVATING THE FLIGHT RECORDER

- The flight data recorder can operate in 3 different modes:
  - “**AUT**” Automatic start record mode.
  - “**ALW**” Always record mode
  - “**OFF**” No data recording.

8.1.1 AUTOMATIC START RECORD MODE

- The default record mode is automatic start record mode, “**AUT**”, parameter (**MAIN SETUP \ n. 22 RECM**).
- In the automatic start record mode it is possible to change the parameters that initiates the recording. You can adjust the change of height in meters (**MAIN SETUP \ n. 23 R.DS**) required for the instrument to automatically start recording a flight
- In the automatic start record mode, the flight recorder will start on take off.
  The take off is detected when there is a change of height (lift or sink) greater than 2 meters (**MAIN SETUP \ n. 23 R.DS**) over 4 seconds.
  e.g. **MAIN SETUP \ n. 23 R.DS = 2** means that a vertical speed (lift or sink) bigger than 0,5 m/s for at least 4 consecutive seconds is required to recognize a take off (0,5 x 4 = 2).
- In order to respect the FAI rules access to the setup menu on the Digifly instrument is blocked when the flight recorder has been activated.
- Once the recorder is activated, the flight recorder will only stop recording when the instrument is turned off.

8.1.2 ALWAYS RECORD MODE

- In the Always record mode "**ALW**" (**MAIN SETUP \ n. 22 RECM**) the flight data recorder starts recording 5 seconds after the instrument is turned on and stops recording when the instrument is turned off.
- In order to respect the FAI rules access to the setup menu on the Digifly instrument is blocked when the flight recorder has been activated.

8.1.3 RECORD MODE OFF

- In the record mode "**OFF**" (**MAIN SETUP \ n. 22 RECM**), no data is recorded.

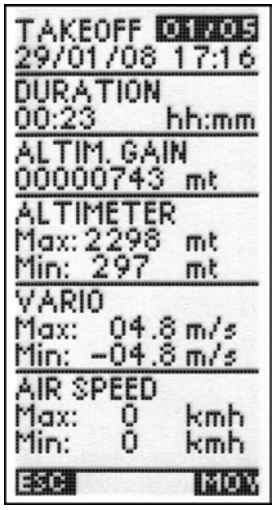
8.2 RECORD RATE

- The recorder rate can be adjusted from 1 to 60 seconds, go to (**MAIN SETUP \ n. 24 RECR**).
- At 1 data point per second you can record 10 hours of flight data.
- At 1 data point per minute, you can record up to 1000 hours of flight data.
- Up to 45,000 flight and GPS data points can be recorded from 250 flights.
- When you are near the Waypoint, go to the recorder rate is automatically increased to 1 data point per second.
- When the recorder memory is full, the oldest flight is automatically deleted.
- The remaining free recorder memory is displayed briefly as the instrument is turned on.
- If a single flight fills the whole memory, the recorder is stopped and the message "**MEM FULL**" is displayed).
- To then record a new flight, is is necessary to clear the whole recorder memory. To delete all flights go to the "**LOGBOOK**" menu, press the GOTO key (long press). A confirmation of "**YES**" or "**NO**" is required.

8.3 RECORDED ALTIMETER

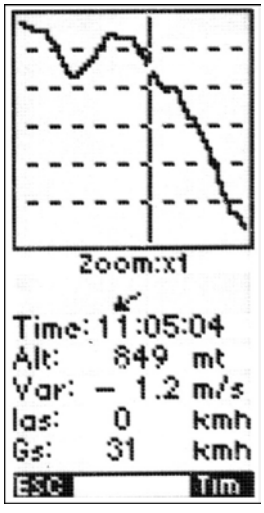
- The Digifly instrument instrument can be set to record either the GPS or the barometric altimeter. To set which altimeter data is to be recoded, go to (**MAIN SETUP \ n. 25 RECA**) and select either "**GPS**" or "**BAR**".

8.4 LOG BOOK MANAGEMENT



- To view saved flight data go to press the MENU key (function "ENT") and select "LOGBOOK". A list of all recorded flights with take off date and time is shown.
- To select which flight you want to view, move up and down using the arrow keys ▲, ▼ and then press the MENU key (function "ENT"). The first flight listed is the last recorded flight.
- To scroll to view the others flights navigate using ▲, ▼ keys
- Press the ON-OFF key (function "ESC") to return to the previous menu.
- To delete all flights from the flight log, from the "LOGBOOK" menu, press the GOTO key (long press). A confirmation of "YES" or "NO" is required.
- For each flight, the flight data screen includes the following information:
  - Take off date and time, the duration of the flight and the total gain of altitude attained, the minimum and maximum values of altimeter A1, the variometer values and air speed.

8.5 FLIGHT PLAYBACK



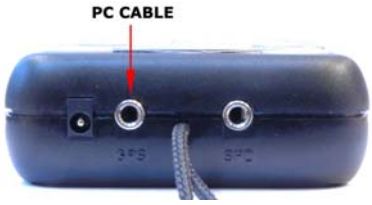
- This is a special function that allows you to review (playback) on your vario the whole flight in detail.
- Moving the cursor on the graph you can read on the screen at each data point: Pressure altitude, variometer, air speed, time and chronograph values, Ground speed and tracking (with arrow) if flight in 3D mode
- To activate the playback function, press the MENU key (function "MOV").
- From this screen you can use these keys for the following functions:

  - Press the arrow keys ▲, ▼ to zoom-in/zoom-out .

  - Press the arrow keys ◄, ► to move the graphic cursor to the left or to the right.

  - Press the MENU key (function "Tim") to change the time display to chronograph display.

9 PC CONNECTION AND INTERFACE



- To download your flight data to your PC, plug the optional PC serial or USB cable into the middle socket on the base of your Digifly instrument.

9.1 COMPETITION SOFTWARE COMPATIBILITY

- The Digifly instrument instruments can communicate via a direct cable connection with some of the commonly used competition software packages e.g. **CompeGPS, MaxPunkte, GpsDump, CheckIn-PWC.**
- With these programs is possible to upload competitions Waypoints, download flight tracks with competition validation and to add automatically the digital signature required for the On Line Contest (OLC).
- The Digifly Vltools2008 software and the CompeGPS, MaxPunkte, GpsDump, CheckIn-PWC software have two different and completely independent ways to connect to the instrument:
- To communicate with a PC connect the optional PC serial cable or USB cable in to the left socket on the bottom of the vario, marked GPS.

9.2 CONNECTING WITH COMPEGPS, MAXPUNKTE, GPSDUMP, CHECKIN (PWC) SOFTWARE

9.2.1 UPLOADING COMPETITION WAYPOINTS

- To upload competition Waypoints from your PC to the Digifly instrument , install on your PC one of the following software packages (CompeGPS, MaxPunkte, GpsDump, CheckIn-PWC).
- Select the correct COM port and set up the communications protocol to MLR 38400 baud.
- Turn on the Digifly instrument instrument and navigate to the "**MENU**" screen. With the up and down keys, highlight the "**WPT COMP**" menu, without entering it.
- From your PC software (CompeGPS, MaxPunkte, GpsDump, CheckIn-PWC) select "send Waypoints to the gps".
- Note that this procedure will automatically erase all old competition Waypoints and the old Competition Route (**Rt 1 Comp**).

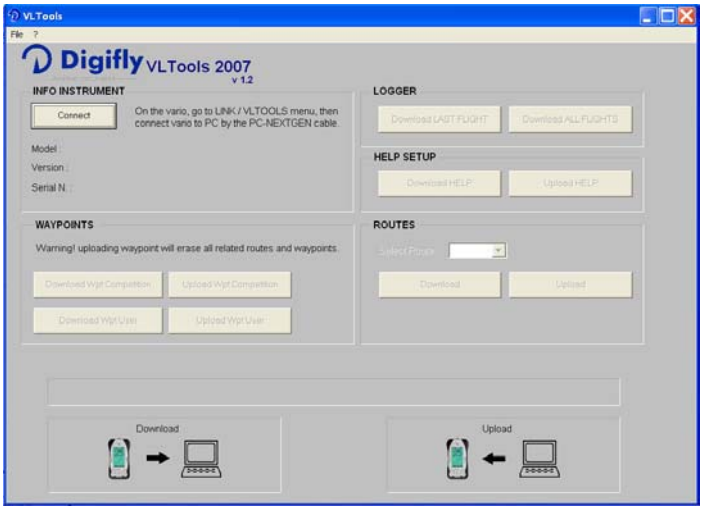
9.2.2 DOWNLOAD A SINGLE FLIGHT

- To download single flights from your Digifly instrument to your PC, enter the "**LOGBOOK**" menu on your instrument.
- With up and down arrows, highlight the desired flight (without entering in it).
- From the PC software (CompeGPS, MaxPunkte, GpsDump, CheckIn-PWC) select "**download flight track**" using the protocol MLR 38400 baud.
- The download can be stopped pressing the "**ESC**" key on the your Digifly instrument.

9.2.3 DOWNLOAD ALL FLIGHTS

- To download all flights from your Digifly instrument to your to the PC, go to the "**LOGBOOK**" menu (without entering in it).
- From the PC software (CompeGPS, MaxPunkte, GpsDump, CheckIn-PWC) select "download flight track" using the protocol MLR 38400 baud.
- The download can be stopped pressing the "**ESC**" key on the Digifly instrument.

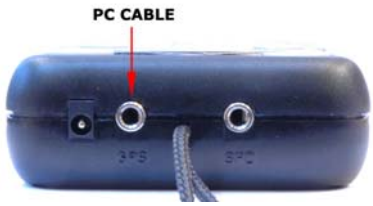
9.3 CONNECTING WITH THE DIGIFLY VLTOOLS SOFTWARE



- The "**VLTOOLS**" software is a free Digifly Windows PC software that allows the full management of flight data track logger, Waypoints, Routes and the selected language of the "**MAIN SETUP"** menu help.
- Connect the PC cable with both the Digifly instrument and the PC switched off.
- Switch on the Digifly instrument and then the PC.
- From the Digifly instrument, go to the menu "**VLTOOLS**", the message "LINK" start to flash.
- From your PC, run the latest Digifly Vltools software and click the "CONNECT" button.
- A successful connection is confirmed by a message with the serial number of your instrument
- Click the "**Download Last Flight**" or the "**Download All Flights**" button

- At the end of the download *.XLS and *.IGC files will be created in the VLTOOLS directory
- The "**Download Last Flight**" button will save last flight in two different file format **flight.igc** and **flight.xls** .
- The "**Download All Flights**" button will save each flight in two different formats (*.igc and *.xls) with file name 01, 02, 03 etc
- The "**Download All Flights**" button will save each flight in two different formats (*.igc and *.xls) with file name 01, 02, 03 etc.
- **Note**: these files will be always overwritten so it's very important that you rename them after the download.
- Files *.igc can be viewed on your PC with most IGC compatible software packages e.g. CompeGPS, MaxPunkte, GpsDump, Seeyou, Oziexplorer, etc.
- Files *.xls can be read & edited by Excel program.
- For more info on all other functions read the Digifly Vltools user manual.

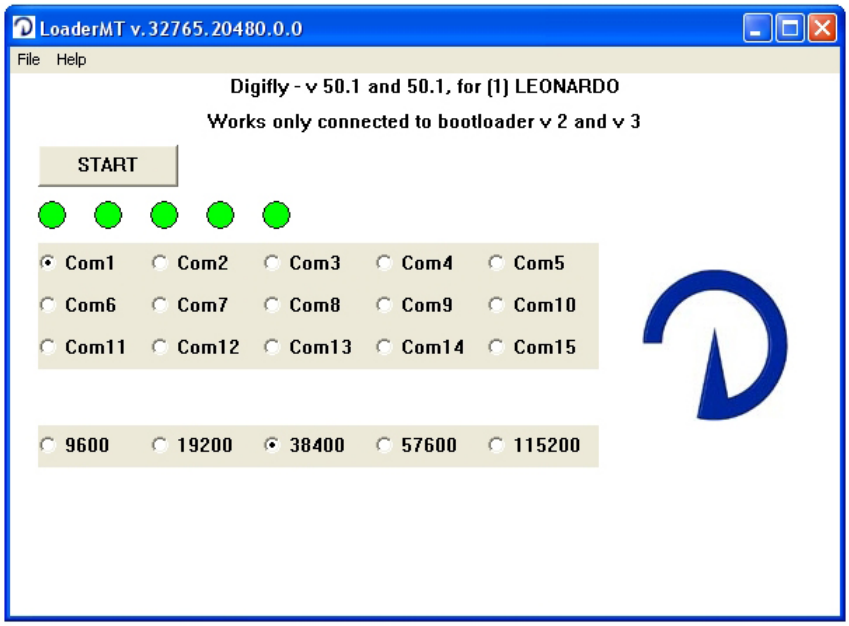
9.4 FIRMWARE UPGRADE



- The software (firmware) on your Digifly instrument can be updated as new releases are made available from Digifly. This will allow your instrument to be kept up to date with new functions and improvements.
- The latest Digifly software may be downloaded from the Digifly web site (**www.digifly.com**) & installed using the optional PC serial or USB cable.
- The optional PC serial or Digifly USB cable is connected to the middle socket on the base of the Digifly instrument.
- When upgrading from Digifly instrument firmware version 44.0 (or older) to a new version all previously recorded flights will be erased and all settings will be restored to the factory default.

9.4.1 UPGRADE PROCESS

- Make sure the battery on your Digifly instrument is fully charged.
- Turn off your Digifly instrument and plug the Digifly PC serial or USB cable in to the middle socket on the base of the Digifly instrument.
- Keeping the MENU key pressed, press the ON-OFF key and wait a long “beep” acoustic confirmation. Note that the screen will not come on.
- Now release the ON-OFF key and then the MENU key.
- From your PC, run the “Upgrade_xx_x_Leonardo.exe” program.


LoaderMT v.32765.20480.0.0
File Help
Digifly - v 50.1 and 50.1, for (1) LEONARDO
Works only connected to bootloader v 2 and v 3
START
Com1 Com2 Com3 Com4 Com5
Com6 Com7 Com8 Com9 Com10
Com11 Com12 Com13 Com14 Com15
9600 19200 38400 57600 115200

- Press Start Button
- Make sure you have only one version of the “Upgrade_xx_x_Leonardo.exe” programme open at a time.
- When the “Upgrade_xx_x_Leonardo.exe” tools software is operating you will see a the progress of the software.
- Upgrade take about 5 minutes , on completion the PC will confirm with a long “beep”.
- Press the ON-OFF key and disconnect the PC cable.
- When you restart your Digifly instrument the version number of the new software you have just installed is briefly shown on the start up screen.
- It is suggested that you upload the new “**help setup**” file in order to obtain information on any of the new parameters that have been installed with the upgrade. Use the function “**Upload Help**” from within the latest version of the Digifly VItools software.

9.5 PROBLEMS CONNECTING TO YOUR PC

Problem: I attached the cable but the software does not connect.

Solutions:

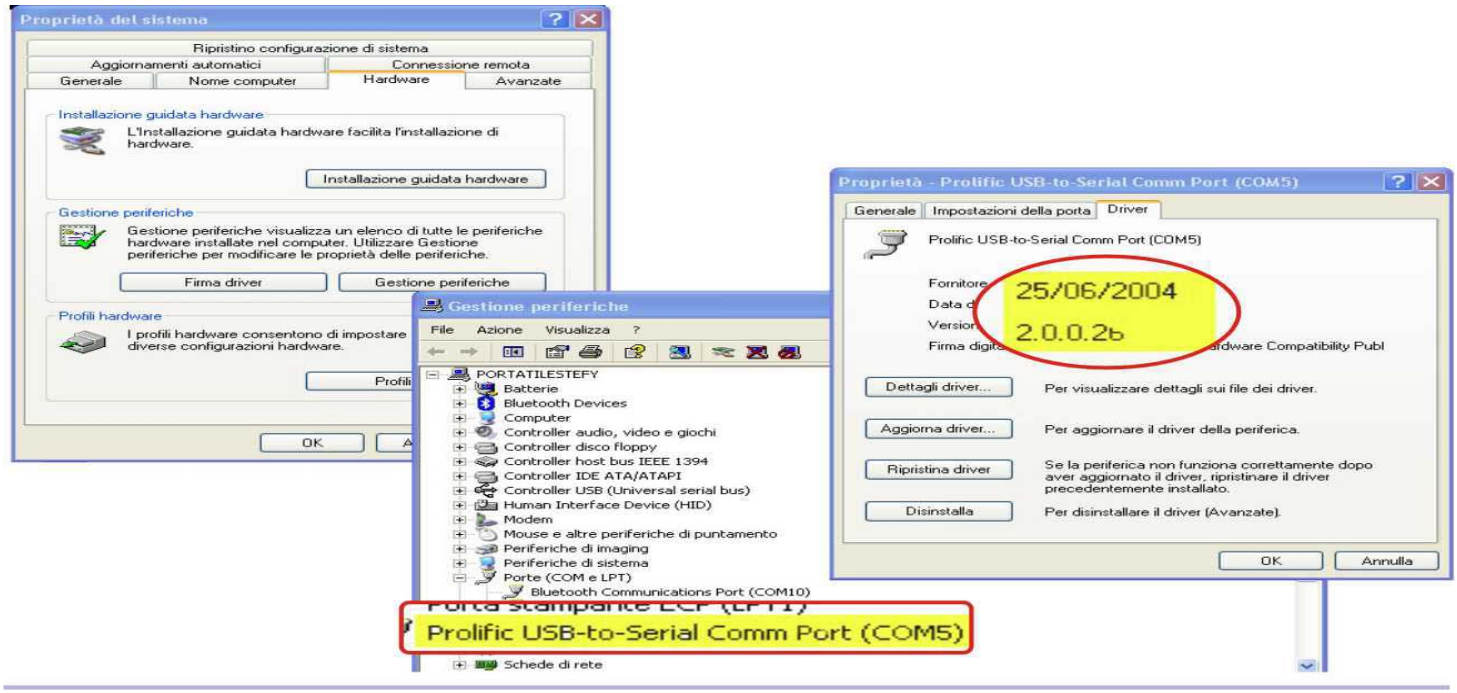
A) Unplug the cable, download from our web site the driver installer (www.digifly.com ->software -> " DIGIFLYNEXTGEN-USB Driver.zip", run it on your PC then plug in the cable again.

How to Check the Driver Installation:

1) Go to the Device Manager : Start -> Control Panel -> System -> Hardware -> Device Manager.

2) Click on the plus sign (+) next to "Ports".

3) If the device is installed properly, you will see "Prolific USB-to-Serial Com Port. (COMx)". Note that x is the number of the COM port assigned to the cable.



B) Look for a conflict with a another program or device and turn off firewall / antivirus programs.

C) It is also possible that the COM port number assigned is too high or duplicated with some other devices e.g. (Bluetooth - Irda).

Try to reassign the COM port number:

1) Go to the Device Manager: Start ->Control Panel ->System ->Hardware ->Device Manager.

2) Click on the plus sign (+) next to "Ports".

3) Right click on the "Prolific USB to Serial Port" and click on Properties.

4) Click on the "Port Settings" tab. Click the "Advanced" button.

5) Pull down the scrollbar on the bottom, left side and select COM 1, 2, 3 or 4 (NOTE: Choose one that does not say "in use" next to it). Click "OK".

6) Click "OK" again. Notice that the device will show up as being on the same COM port that it was before (i.e., COM5), but will show up on the new port if you close the Device Manager and open it again.

D) From Windows, right click on the Vltools2007 icon and tick the check box “run this program in Windows98/WindowsMe compatible mode”.

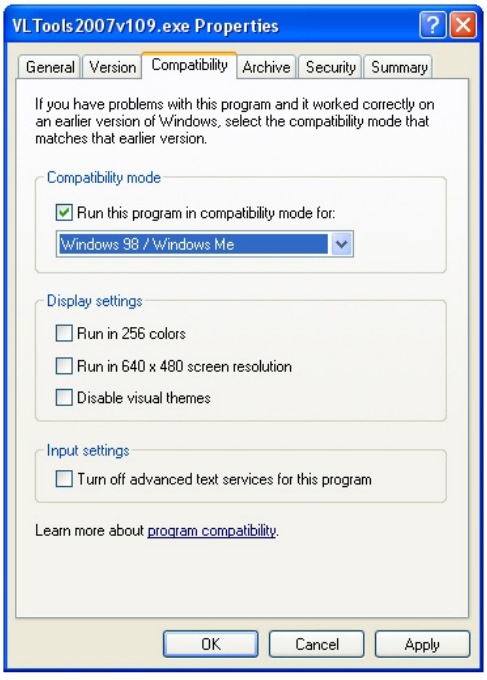
Problem: The cable is working with the Digifly Vltools but not with the software I'm using.

Solutions:

Make sure that the software and the cable are using the same COM port number (try with the Digifly Vltools program to check the COM port number).

If you are still experiencing problems try with the following:

- Temporarily disable your antivirus and firewall software.
- Manually setup on your PC the communication protocol MLR 38400 baud.
- If this still fails, try adjusting the communication protocol to MLR 19200 baud.



9.6 TELEMETRY OUTPUT

- The **Leonardo Pro BT** has a high speed (10 times per second) telemetry output. This is a new very powerful function that sends your flight information in "real time" to external equipment e.g. PDA , Palm, Pocket PC or your even to your mobile phone by Bluetooth or a serial/ USB cable. Data can be sent to external equipment e.g. for car navigation, remote tracking of pilots, SMS alarm messages for "search & rescue", CompeGPS for Pocket PC, mobile phones and many flight programs running on Palm, Pocket PC and Cellphone (available free on the internet).
- External equipment can be connected to the "**GPS**" socket on the base of the Digifly instrument in order to receive the telemetry data output.

- To enable telemetry output, go to (**ADVANCED SETUP \ n. 6 TELE**) and select the correct data output format (for more information read the related protocol documentation on our web site www.digifly.com)

9.6.1 BLUETOOTH TELEMETRY OUTPUT

- To send telemetry data output via the integrated Bluetooth module (**Cartesio Pro Bt** and **Leonardo Pro Bt** models only) go to (**ADVANCED SETUP \ n. 20 BLUT**) and select "**ON**" .
- Please refer to the Bluetooth connection setup instructions in the documentation that comes with your PDA, Smartphone or Laptop. You will need to set up a Serial Port connection (SPP) between the Digifly instrument and your device , make sure you also select the correct COM port number.
- The Digifly instrument will appear to your device as the " Digifly Cartesio Pro BT" or the "Digifly Leonardo Pro BT" and its telemetry data will be output on its serial output..
  To ensure ease of use , create a "pairing" between your device and your Digifly instrument . The "pairing" code is **0000**.
- In the Bluetooth connection property of your device "authorize" the connection with the Digifly instrument so for further use it will be automatically connect (it will not need to be "paired" again).
- When the Bluetooth connection is enstablished the Bluetooth icon in the status bar of the Digifly instrument is on and is not blinking.

- After setting up the Bluetooth connection , you will need to modify the properties of the software on your PDA, Smartphone or Laptop to the telemetry data output format from the Digifly instrument.
- To choose the correct Digifly telemetry data output format go to (**ADVANCED SETUP \ n. 6 TELE**) , for more information read the related protocol documentation on our web site www.digifly.com.
- When the Bluetooth connection is enabled battery life will be slightly reduced.

9.7 EXTERNAL GPS CONNECTION (Cartesio Models)

- An external GPS receiver can be connected to the Digifly **Cartestio**. Connect to the "**GPS**" socket on the base of the Digifly **Cartesio**.
- To enable the external GPS receiver to send data output to the Digifly **Cartesio**, setup the external GPS receiver data output to:

  - Data Output Protocol = NMEA 183 2.0 or higher.

  - Data Output Baud Rate = 4800.

  - Connect the Digifly **Cartesio** to the external GPS receiver using the Digifly GPS cable.

  - GPS cables for different GPS models are available from Digifly.

10 APPENDIX

10.1 DIGIFLY CARTESIO PLUS STANDARD ACCESSORIES

- The Digifly **Cartesio Plus** has the following accessories provided as standard:
- Protective case.
- Leg strap.
- AA 1.5V removable non-rechargeable battery.

10.2 DIGIFLY CARTESIO PRO BT - LEONARDO PRO STANDARD ACCESSORIES

- The Digifly **Cartesio Pro Bt** , **Leonardo Pro** and **Leonardo Pro Bt** models has the following accessories provided as standard:
- Protective case.
- Leg strap.
- Internal rechargeable lithium battery.
- AA 1.5V High Power removable non-rechargeable battery.
- Wall adaptor.

10.3 OPTIONAL ACCESSORIES

- The following optional accessories are available from Digifly:
- Digifly PC serial cable to download flight data and upload new firmware directly from the Internet.
- Digifly PC USB cable to download flight data and upload new firmware directly from the Internet.
- Air speed probe for hang glider.
- Air speed probe for paraglider.
- Hang gliding vario mount.
- Paragliding vario mount.
- Digifly 12V plug car recharger cable.
- Combined Digifly PC USB cable & 12V plug car recharger cable

10.4 DIGIFLY TECHNICAL FEATURES

10.5 STANDARD FUNCTIONS

- Graphic altimeter.
- Altimeters 9,000 m (29527 ft).
- Super fast vario with dynamic filter ‘IntelliVario .
- Acoustic vario with adjustable levels, volume and tone.
- Analogue vario +/- 24 m/s (2400 ft/min).
- Digital vario +/- 25 m/s (5000 ft/min).
- Vario integrator adjustable from 0 to 60 sec.
- Total energy compensation (with optional air speed probe).
- Input for optional air speed probe 150 km/h (93 mph) with user calibration.
- Adjustable stall alarm visual and acoustic (with optional air speed probe).
- Barometer (range 300 to 1200 mB) with user calibration.
- Thermometer (range -30°C to +70°C) (range -22 °F to +158 °F).
- Constant battery monitoring.
- Date and time with GPS synchro, chronometer, flight timer.
- Adjustable units of measure.

10.6 ADVANCED FUNCTIONS

- 3 adjustable polar curves.
- McCready and Equivalent McReady function (with optional air speed probe).
- Speed To Fly (with optional air speed probe).
- Efficiency related to the air (with optional air speed probe).
- Netto Vario (with optional air speed probe).
- Thermal sniffer (with optional air speed probe).
- Thermal centering function.
- Auto zero thermal altimeter.

10.7 GPS FUNCTIONS

- Integrated high sensitivity 20 channel SIRF III GPS receiver (**Leonardo**)
- Latitude, Longitude, Altitude GPS, Direction GPS (TRK), Ground Speed GPS.
- Wind speed and direction indicator (with GPS).
- Efficiency related to the ground (with GPS ground speed).
- Direction and distance to the last thermal.
- Glide calculator.
- Direction, distance and height to the current Waypoint.
- Required efficiency to the current Waypoint.
- Direction to next Waypoint.
- Safe landing glide cone indication.
- Multiflight logger 3D recorder (flight data and GPS) with Autostart and Playback.
- Data points 100,000 in “2D” mode, and 45,000 in “3D” mode.
- From 1000 hours with 1 data point per minute to 10 hours with 1 data point per second
- 250 max flight number.
- Compatible with most competition software programs.
- Automatic FAI cylinder turnpoint and Start Pylon validation (visual and acoustic).
- 200 Competition Waypoints + 200 User Waypoints
- Routes with 20 Waypoints on each Route.

10.8 GENERAL SPECIFICATIONS

- High resolution graphic LCD display 128 x 64 pixels.
- Upgradeable Flash memory software available from the Internet using the optional PC cable via your PC.
- PC connection.
- Input for optional air speed probe.
- Integrated Bluetooth Module v2.0+EDR - SPP profile (**CartesioProBt** , **LeonardoProBt**)
- High speed telemetry output (**CartesioProBt** , **LeonardoPro** , **LeonardoProBt**)
- Input for external power supply (**CartesioProBt** , **LeonardoPro** , **LeonardoProBt**)
- Integrated battery recharger (**CartesioProBt** , **LeonardoPro** , **LeonardoProBt**)
- Integrated rechargeable lithium battery (**CartesioProBt** , **LeonardoPro** , **LeonardoProBt**)
- Battery life min 30 + 20 hours / max 200 hours (**CartesioProBt** , **LeonardoPro** , **LeonardoProBt**).
- Battery life 200 hours (**CartesioPlus**).
- Dimensions (H x L x D) 144mm x 72mm x 25mm.
- Weight (with battery) 180g (**CartesioPlus**)..

- Weight (with batteries) 240g (CartesioProBt , LeonardoPro , LeonardoProBt)
- The Digifly CartesioProBt , LeonardoPro , LeonardoProBt are supplied with leg strap, protective case , internal rechargeable lithium battery , AA 1.5V High Power non-rechargeable battery and wall recharger .
- The Digifly CartesioPlus is supplied with leg strap, protective case and AA battery.
- 3 year warranty.

10.9 MAIN SETUP PARAMETERS

The following is a list of parameters that can be adjusted. For each parameter you can see the range of values, the factory setting (default) and the unit of measure.

n	Name	Description	Range	Default	Units
1	CTRS	display contrast	40 - 60	50	%
2	V.UP	acoustic vario lift setting	0 - 25	0.05	m/s
3	V.DN	acoustic vario sink setting	0 - 25	3.5	m/s
4	TONE	vario tone	FAS/STD/SFT	STD	----
5	RVAR	acoustic vario sensitivity	0.1- 3.0	0.4	sec
6	INTE	vario integrator	0 - 60	1	sec
7	FS_V	graphic vario scale (1,6,12)	LOW/MED/HIGH	MED	m/s
8	SIMV	vario simulator	ON/OFF	OFF	----
9	STAL	stall alarm level	0 - 150	0	km/h
10	TEC	total energy compensation	0 - 100	0	%
11	KIAS	air speed calibration	50 - 200	100	%
12	KBAR	barometer calibration	+/- 20.0	0	mB
13	BARX	graphic altimeter x	0.4 - 4	1.0	min
14	BARY	graphic altimeter y	3 - 3000	30	mt
15	UTCO	time zone difference	-12/+12	2	hour
16	HOUR	time setting: hours	0 - 23	----	hour
17	MIN	time setting: minutes	0 - 59	----	minute
18	DAY	time setting: day	1 – 31	----	day
19	MONT	time setting: month	1 – 12	----	month
20	YEAR	time setting: year	0 – 99	----	year
21	PILO	pilot name	6 letters	----	----
22	RECM	recorder mode	AUT/ALW/OFF	AUT	----
23	R.DS	autorecorder meters	1 – 30	2	----
24	RECR	recorder rate	1 - 60	3	sec
25	RECA	recorded altimeter	GPS/BAR	GPS	----
26	GTYP	glider type	6 letters	----	----
27	GID	glider id	6 letters	----	----
28	U-AL	altimeter units	MT/FT	MT	----
29	U-SP	speed units	KMH/MPH	KMH	----
30	U-TE	temperature units	°C/°F	°C	----
31	KTMP	temperature calibration	+/- 20.0	0	°C
32	LANG	help language	USR/UK/ITA/ESP/DEU/FRA/CZE/HUN/LN1/LN2		

10.10 ADVANCED SETUP (ADV-SETUP) PARAMETERS

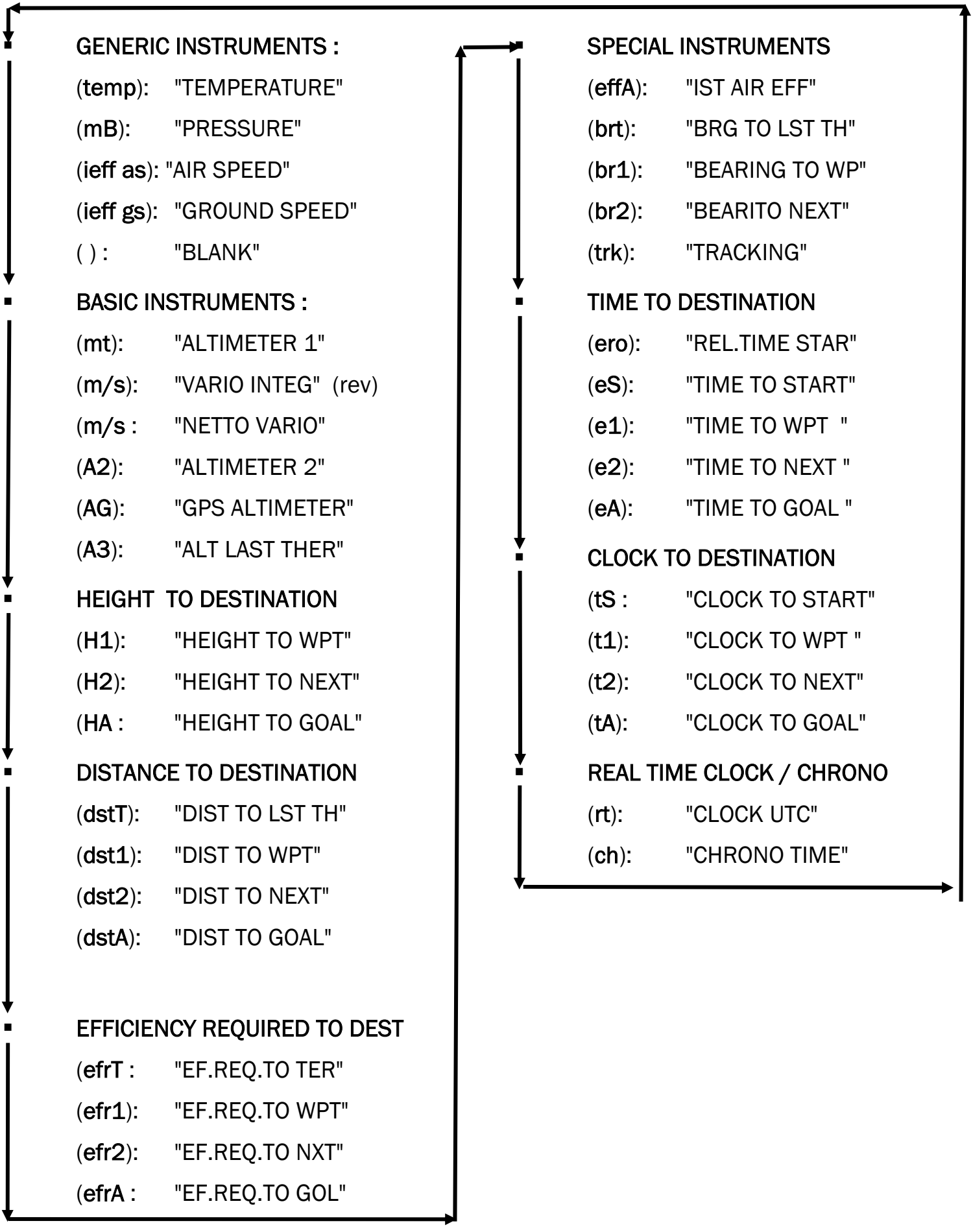
The following is a list of parameters that can be adjusted. For each parameter you can see the range of values, the factory setting (default) and the unit of measure.

n	Name	Description	Range	Default	Units
1	IFLY	intelliflight function	ON/OFF	OFF	----
2	THEV	thermal detect vario thres.	0 - 25	0.5	m/s
3	THET	thermal detect time thres.	1 - 30	10	sec
4	EFF	instant efficiency average	1-30	3	sec
5	EFFA	average efficiency for HW	1-100	15	sec
6	TELE	telemetry out enable	OFF/CAR/FL1/FL2/FL3/DBG	OFF	----
7	POWE	gps mode (Leonardo only)	STD/ECO/EC2	ECO	----
8	POLA	active polar	OFF/P1/P2/P3	OFF	----
9-11	---	P1-A P1-B P1-C	polar 1 coeff.	xxx	----
12-14	----	P2-A P2-B P2-C	polar 2 coeff.	xxx	----
15-17	----	P3-A P3-B P3-C	polar 3 coeff.	xxx	----
18	MCRA	McCready value	0.2 - 30	10	min
19	MCRE	McCready equiv average time	0.1 – 3	0.4	sec
20	BLUT	bluetooth enable	OFF/ON	OFF	----

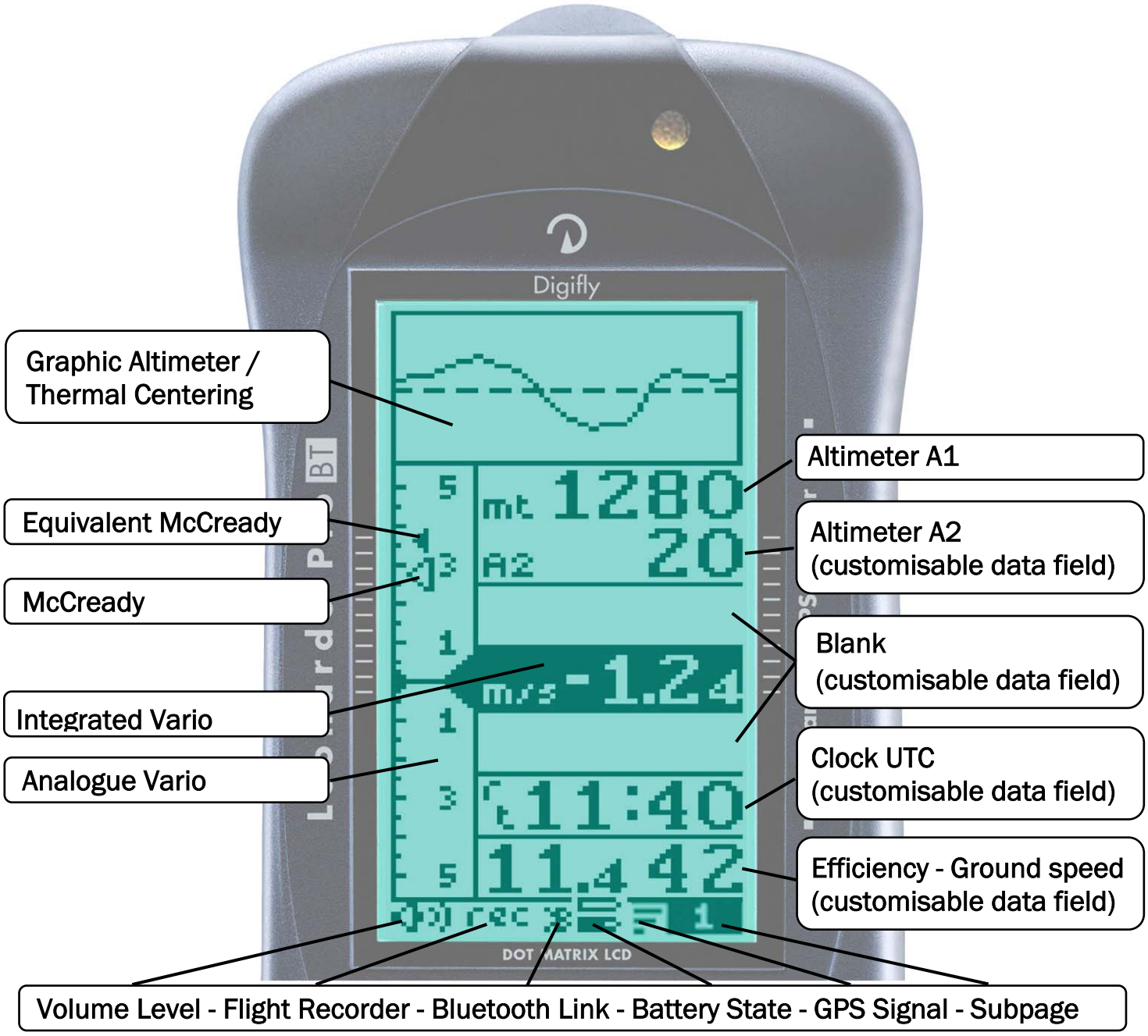
10.11 RESTORE FACTORY SETTINGS

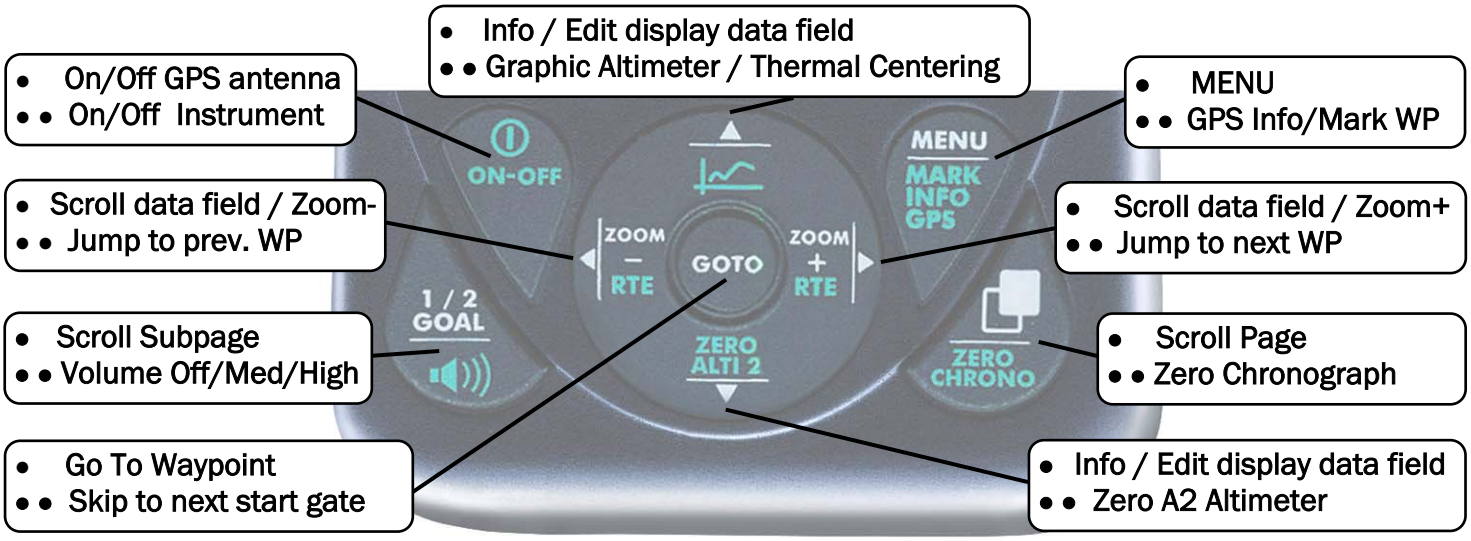
- To restore the factory settings (default parameters) and default screen setups, press and hold down the key as you turn vario on. Keep the key pressed until a message “**FACTORY SET?**” appears, then confirm with “**YES**” or “**NO**”.

10.12 DATA FIELDS SHOWN IN SEQUENCE



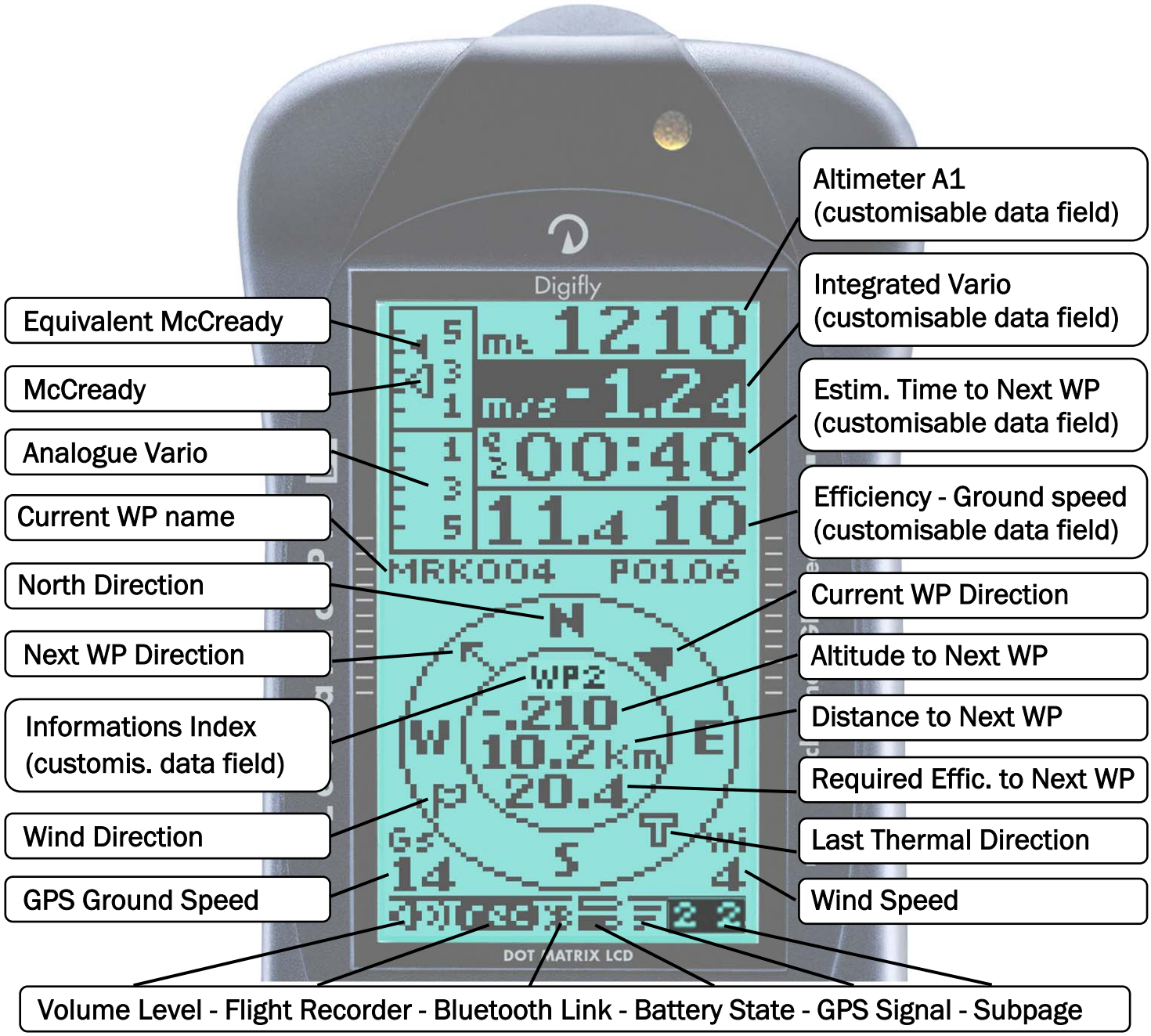
10.13 THERMAL DISPLAY SCREEN

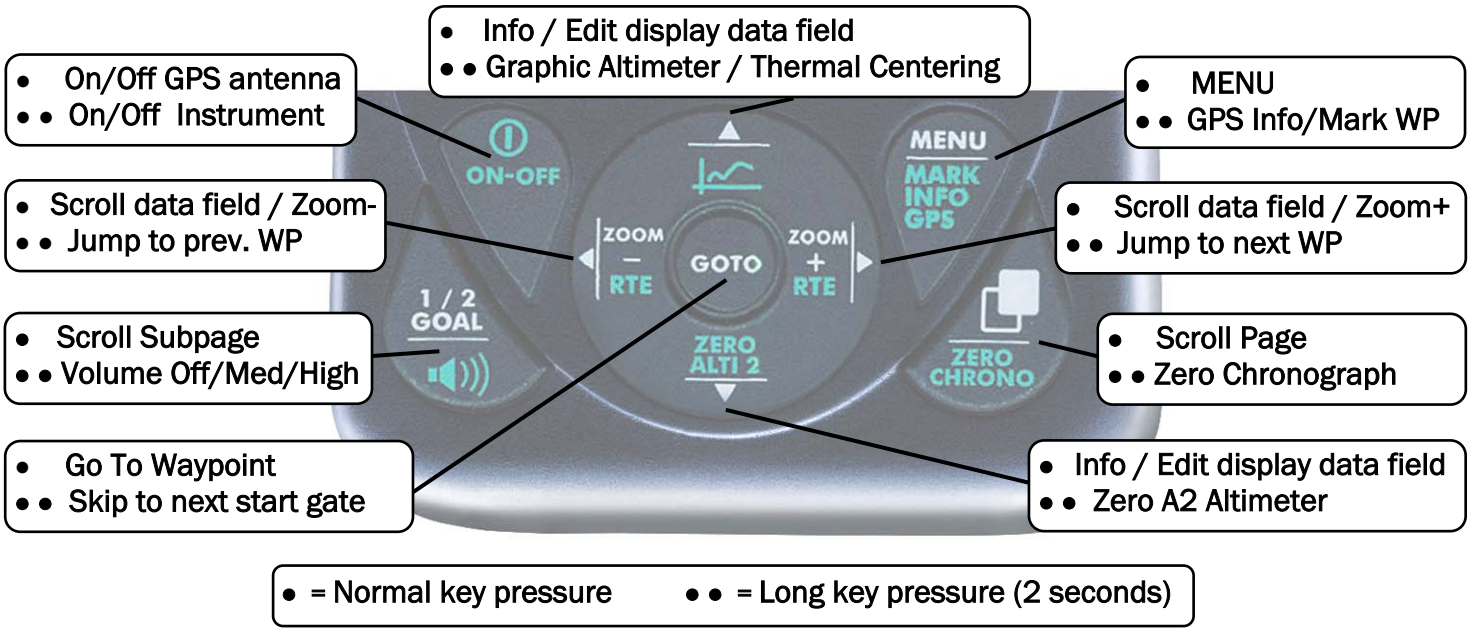




• = Normal key pressure •• = Long key pressure (2 seconds)

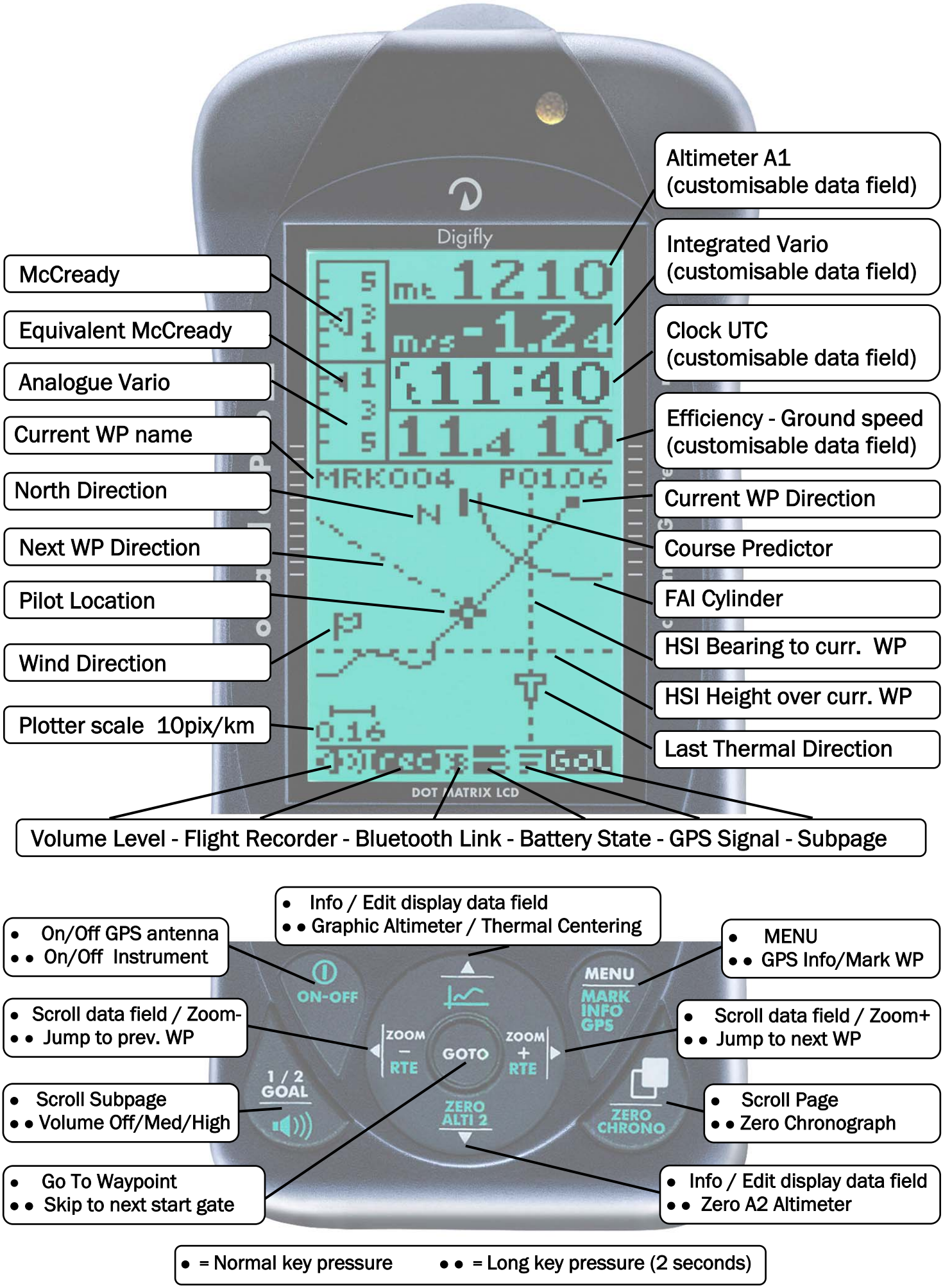
10.14 GLIDE COMPASS DISPLAY SCREEN





• = Normal key pressure •• = Long key pressure (2 seconds)

10.15 GLIDE PLOTTER DISPLAY SCREEN



• = Normal key pressure •• = Long key pressure (2 seconds)